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SIGNIFICANCE OF PAIN AND VOMITING IN CHOLELITHIASIS

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The susceptibility of the gallbladder and extrahepatic ducts to overdistention or inflammation from cholelithiasis makes these structures a common source of referred visceral pain. The utilization of the biliary passages in animals in the study of visceral pain has brought forth information of great value but is limited, as are all experiments involving pain in animals, because of the great barrier of speech. I have mechanically distended these passages in conscious patients at the time of operation in an effort to make observations on the important mechanism of referred visceral pain and determine whether a difference existed in the radiation and type of pain with distention of the gallbladder as compared to the common duct.

Why should patients with cholelithiasis have pain in the epigastrium, right upper quadrant or left upper quadrant, or pain referred to the back? Of the various theories proposed to explain the mechanism of referred visceral pain, two of the better known and widely accepted are those proposed by Mackenzie [1] and more recently by Morley.[2] A review of these theories is given in preparation for an analysis of our experimental observations to determine which theory more satisfactorily explains the mechanism of pain arising from the gallbladder or extrahepatic ducts.

According to the widely known and accepted theory of Mackenzie, pain impulses arising from the gallbladder or common duct travel to the celiac ganglion and over the right splanchnic nerves into the cord, as shown in figure 1. The Mackenzie school does not recognize true visceral pain as such but believes that these impulses set up an irritable focus in that segment of the cord into which they enter; furthermore, that the pain arises from the ordinary sensory somatic impulses entering the segment of the cord already sensitized by the sympathetic impulses. According to this theory, visceral disease can express itself as pain only by secondarily involving the somatic pathways either in the dorsal root ganglion or in the spinal cord. Mackenzie believed that a viscerosensory mechanism (*A-Z*, fig. 1) accounts for the referred pain found in the epigastrium, the right upper quadrant or the back. Likewise an overflow of afferent impulses from the organ involved would produce muscular spasm over a visceromotor mechanism (*B-Z*, fig. 1). The surface of the peritoneum was supposed to be insensitive; but the subperitoneal layer supplied by the cerebrospinal nerves is quite sensitive. Figure 1 shows the cerebrospinal nerves ending in the subperitoneal layer. The location of the pain according to this theory should remain stationary, regardless of the size or location of the gallbladder, since the peritoneum is not involved in the mechanism.

Figure 2 demonstrates the pathways for pain in the back in cases of cholelithiasis, according to the views of Mackenzie. It has been repeatedly proved in animals that the right splanchnic nerves carry the impulses of pain from the gallbladder and major bile ducts.[3] It is anatomically known that the right splanchnic nerves usually communicate with the posterior roots of the fifth to the twelfth intercostal nerves, and that the latter supply the segments of the skin in which the painful areas in gallbladder disease are commonly referred. Pain in the back is usually located in the interscapular or infrascapular region on the right side. A careful analysis will often show a similar location of pain when the patient complains of pain in the shoulder. Relatively few have discomfort in the third or fourth cervical segment, as noted following the stimulation of the phrenic nerve.

The theory of Morley is explained in figure 3. He agrees with Ryle,[5] Hurst [6] and others that a true visceral pain does exist and that it is usually the result of abnormal tension on the sympathetic afferent nerve endings in the muscular walls of the hollow viscera. Morley believes that visceral pain is in no sense referred to superficial structures of the abdominal wall and is a deep-seated central pain, not accurately localized. The early epigastric symptoms of appendicitis are an example of such a pain. Likewise, vaguely localized epigastric distress might be expected as an early symptom of distention of any part of the digestive tube supplied by the celiac ganglion, including the gallbladder. The pain of large bowel distention and the like is similarly referred to a lower level because of the sympathetic nerve supply. Impulses traveling over the splanchnic nerve (*Z*) enter the cord and are recognized by the higher centers as pain, but they do not enter into the mechanism of referred pain to the back or right upper quadrant.

Morley believes that (1) referred pain does not occur unless the cerebrospinal nerves are stimulated, (2) the peritoneum supplied by the cerebrospinal nerves is highly sensitive, and (3) the cerebrospinal nerves extend to the peritoneum (fig. 3) instead of to the sub-

From the Surgical Clinic of the Peter Bent Brigham Hospital.

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Read before the Section on Surgery, General and Abdominal, at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1. Mackenzie, James: Symptoms and Their Interpretation, London, Shaw & Sons, 1920.
2. Morley, John: Abdominal Pain, New York, William Wood & Co., 1931.
3. Schrager, V. L., and Ivy, A. C.: Symptoms Produced by Distention of the Gallbladder and Biliary Ducts, Surg., Gynec. & Obst. **47**: 1-13 (July) 1928.
5. Ryle, J. A.: Study of Pain, Brit. M. J. **1**: 537 (March 31) 1928.
6. Hurst, A. F.: The Sensibility of the Alimentary Canal, London, 1911.

peritoneal layer as shown in figure 1. Capps [7] found that the pain elicited by stimulation of the parietal peritoneum is localized with considerable accuracy by the patient, the error being less than 1 inch (2.5 cm.). The pain of cholelithiasis in the right upper quadrant would indicate that the underlying peritoneum has been stimulated according to the theory of Morley. He has emphasized the change in position of the pain and tenderness as an acute gallbladder descends with an increase in size. He proposes a peritoneocutaneous radiation (*A*, fig. 3) all within the cerebrospinal nerves to explain referred pain; likewise, a peritoneomuscular reflex (*B*, fig. 3) to explain muscle spasm and rigidity. Ryle [5] has emphasized that referred pain does not often occur from distention alone but is usually accompanied by inflammation. In practically every case of cholelithiasis there is an accompanying chronic cholecystitis which would be an adequate stimulus for the pain or tenderness in the right upper quadrant.

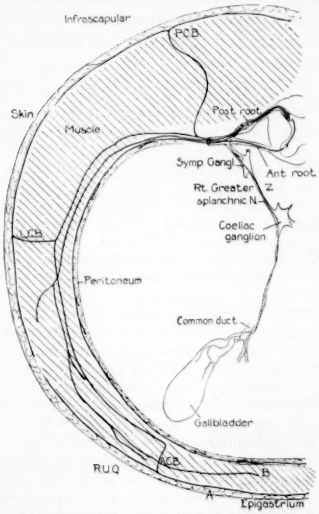

Fig. 1.—Explanation of the theory of Mackenzie. The gallbladder is not in contact with the parietal peritoneum. The cerebrospinal nerves end in the subperitoneal tissue: *A-Z*, viscerosensory reflex; *B-Z*, viscero-motor reflex; *P. C. B.*, posterior cutaneous branch; *L. C. B.*, lateral cutaneous branch; *A. C. B.*, anterior cutaneous branch.

The explanation of Morley for the pain in the back in cases of cholelithiasis is shown in figure 4. The dotted lines represent innervation by the sympathetic nerves to the visceral peritoneum. The heavy lines represent the surfaces of the peritoneum, which he believes are supplied by the cerebrospinal nerves. These sensitive nerves extend a short distance up the mesenteries and into the gastrohepatic ligament about the major bile ducts. He believes from his observations on the production of pain in patients under local anesthesia that the cerebrospinal nerves extend a greater distance into the mesenteries than was previously maintained. The inflammation about the extrahepatic ducts themselves stimulates the somatic nerves in the gastrohepatic ligament and so gives rise to localized pain in the back, just as in the right upper quadrant. He calls attention to the frequent observation that during an operation for gallstones, following a recent attack of gallstone colic, evidence of inflammatory congestion and edema is usually found involving the gallbladder wall and adjacent bile ducts. The exact anatomic relation of the cerebrospinal nerves to the gastrohepatic ligament is not known. However, since the sensory supply of the margins of the diaphragm, both the pleural and peritoneal surfaces, arises from the lower six intercostal nerves, it is reasonable to assume that branches may extend into the adjacent tissues. In the great majority of cases the pain in the back is referred to the region supplied by one or more of the lower six thoracic nerves.

The anatomic arrangement and accessibility of the gallbladder and common duct permit the easy utilization of these structures in animals for the study of the mechanism of referred visceral pain. Schrager and Ivy [8] have reported observations on the mechanical distention of the gallbladder or biliary passages in dogs. Their studies were undertaken primarily to give experimental evidence to the clinical observations that patients with gallstone colic have an associated inspiratory distress. They found that distention of the gallbladder caused distress, inhibition of respiration, and salivation denoting nausea in approximately 40 per cent of the dogs. Vomiting occurred only once, and then when food was in the stomach. Distention of the biliary duct caused more striking symptoms than distention of the gallbladder. Salivation or nausea always, and vomiting frequently, occurred if the pressure was above 100 mm. of mercury.

Oglivie [10] in England distended the gallbladder in a series of patients following cholecystostomy. Of course, in these patients the gallbladder was attached to the anterior wall. He found that nausea was present in four of the six cases, but no vomiting. The patients all complained of a distress resembling indigestion. The pain was roughly localized to the region of the gallbladder in four cases, to the xiphoid process in one and to the left hypochondrium in another. He concluded that accurate localization of the pain in gallbladder disease was an indication of involvement of the parietal peritoneum by an infectious process, and in the absence of infection the pain due to obstruction of the cystic duct may be vaguely localized to the upper part of the abdomen.

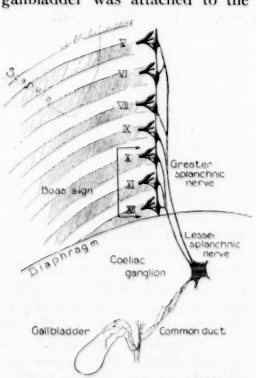

Fig. 2.—Pathways for pain in the back, according to theory of Mackenzie.

Our experimental observations corroborate his results.[11] We have made observations on nine women,

7. Capps, J. A., and Coleman, G. H.: A Clinical Study of Pain, New York, Macmillan Company, 1932.

10. Ogilvie, W. H.: Some Notes on the Surgical Aspects of Gallstone Disease, Guy's Hosp. Rep. **75**: 78-97 (Jan.) 1925.

11. Zollinger, Robert: Observations Following Distention of the Gallbladder and Common Duct in Man, Proc. Soc. Exper. Biol. & Med. **30**: 1260-1261 (June) 1933.

operated on for gallbladder disease. The complaints varied from chronic indigestion to typical as well as bizarre radiation of the pain. Chronic cholecystitis and cholelithiasis were found in every case at operation.

In seven patients the gallbladder was exposed and the stones were removed after a short gas-oxygen anesthesia. A sterile rubber balloon, carried on a sterile

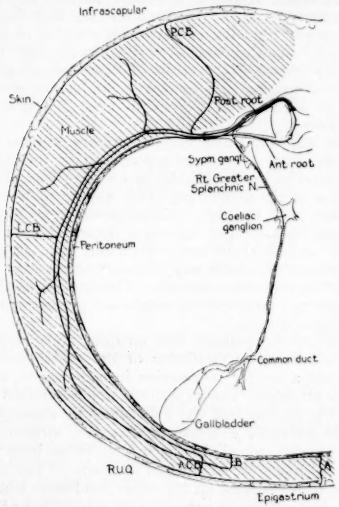

Fig. 3.—The theory of Morley. The gallbladder is in contact with the parietal peritoneum. The cerebrospinal nerves end in the peritoneal layer: *A*, peritoneocutaneous radiation; *B*, peritoneomuscular reflex; *P. C. B.*, posterior cutaneous branch; *L. C. B.*, lateral cutaneous branch; *A. C. B.*, anterior cutaneous branch.

hollow metal tube, was inserted into the gallbladder (fig. 5). The tube was connected to a glass jar through which the balloon could be inflated and the amount of pressure recorded. The fundus of the gallbladder was then sealed around the rod by several silk sutures and replaced in the abdomen away from the abdominal wall. The edges of the wound were held in approximation and all gauze and retractors removed from its margins to avoid additional painful stimuli. Distention was carried out after the patient had recovered sufficiently from the short anesthesia to answer questions intelligently. In two patients the observations were made following exposure of the gallbladder under local infiltration anesthesia of the right upper quadrant. The common duct was distended in three of the nine patients by the same method and the resultant signs and symptoms were similarly recorded. The pressure applied varied between 50 mm. and 150 mm. of mercury.

Our observations indicated that: 1. Mechanical distention of the gallbladder usually gave rise to deep epigastric discomfort, more severe but similar to the attacks of indigestion in gallbladder disease (fig. 6). 2. The discomfort was not referred to the gallbladder region. 3. Distention of the gallbladder did not cause vomiting. 4. It was found impossible to reproduce the usual referred pain in the back, the infrascapular region or the right upper quadrant. 5. Objectively and subjectively the patients had respiratory difficulty when the gallbladder was distended, especially inspiratory difficulty. 6. Distention of the gallbladder, producing contact with the parietal peritoneum, gave localized pain. This was markedly relieved by infiltration of the overlying abdominal wall with procaine hydrochloride. 7. Two patients did not complain of discomfort regardless of the amount of distention of the gallbladder. Our observations further indicated that: 1. Mechanical distention of the common duct produced severe epigastric distress. The pain was more severe than that in distention of the gallbladder in the same patient. 2. Distention of the common duct produced vomiting in two of the three cases. 3. There was no evidence of referred pain to the right upper quadrant or to the back. 4. Inspiratory distress was present.

TABLE 1.—*Observations in Nine Women Who Came to Operation*

Distention of the Gallbladder
1. Deep epigastric discomfort (indigestion)
2. Absence of pain in gallbladder region
3. Absence of vomiting
4. Absence of referred pain
5. Inspiratory difficulty
6. Contact with parietal peritoneum gives right upper quadrant pain
7. Absence of pain in two patients
Distention of the Common Duct
1. Severe epigastric distress
2. Vomiting
3. Absence of referred pain
4. Inspiratory disease

I have attempted to explain our observations according to the commonly accepted theories of referred visceral pain previously reviewed. Contrary to the Mackenzie theory, I believe that a true visceral pain exists. This was represented in our experiments by the consistent finding of epigastric discomfort similar to the attacks of indigestion noted by the patients previous to operation. Two of our patients had a tendency to refer their epigastric discomfort to the left upper quadrant, as they did previous to operation. Sheldon[12] has recently reported observations on a patient who complained of precordial pain. He[13] stated that the pain was usually in the epigastrium and only several times was it referred to the precordium. The pain was never referred to the back. The pain in the left upper quadrant may represent atypical localization of the vaguely localized visceral epigastric pain. The mechanism was intact for the reproduction of referred pain in either

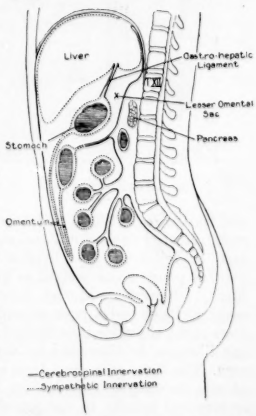

Fig. 4.—Possible pathways for pain in the back according to theory of Morley. Solid lines represent innervation by cerebrospinal nerves. The visceral peritoneum supplied by sympathetic innervation is represented by dotted lines.

12. Sheldon, L. B.: A Clinical Study of Biliary Secretion in a Case Presenting a Completely Obstructed Common Duct, J. A. M. A. **104**: 915-916 (March 16) 1935.
13. Sheldon, L. B.: Personal communication to the author.

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the right upper quadrant or the back, according to the theory of Mackenzie. Although the mechanical distention was an adequate stimulus for visceral pain to reach the cord by the usual route, referred pain did not result despite the fact that the majority of these patients previous to operation had pain in the back or right upper quadrant. According to the theory of Mackenzie, a previous irritable focus must have existed in the cord in several of these patients with referred pain up to the time of operation, and it is reasonable to assume that the mechanism should have been repeated following distention of these organs.

The relief obtained by infiltration of the overlying skin with procaine hydrochloride might be interpreted to favor the theory of Mackenzie. Some infer that by this method afferent somatic impulses failed to reach the irritable focus of the cord, and referred pain was not recognized. Weiss and Davis [14] believe that, since pain referred from intra-abdominal disease is obliterated or relieved by infiltration of the skin over the painful point, some weight is given to the Mackenzie theory. However, Morley believes that it is just as much in favor of his peritoneocutaneous radiation, since pain in the shoulder tip referred over the phrenic nerve can likewise be alleviated by anesthetizing the painful area. The latter pain rises from stimulation of the dome of the diaphragm, travels over the phrenic nerve and is referred usually to the fourth cervical segment, all within the somatic cerebrospinal nerves.

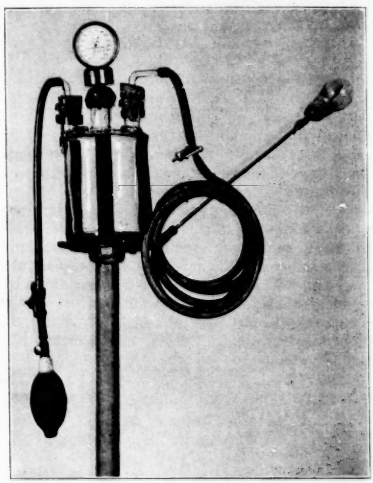

Fig. 5.—Apparatus used in the experimental studies.

Since referred pain could not be reproduced by mechanical distention either in our cases or in those of Oglivie, weight is given to the argument that referred pain and tenderness are more likely to result from inflammatory lesions. The common association of cholecystitis with cholelithiasis would adequately account for the frequency of referred pain in this disease. The pain in the right upper quadrant is usually localized over the region of the gallbladder, and it is suggested that the peritoneum may enter into the mechanism of this pain. The peritoneocutaneous radiation of Morley could be used to explain this mechanism (fig. 3). Since Sheehan has offered anatomic evidence in favor of afferent somatic nerves branching in the gastrohepatic ligament, I believe that these branches may come from any of the lower six thoracic nerves that supply the adjacent peritoneal margins of the diaphragm. In other words, the pain in the back in gallbladder disease is the result of direct inflammation of the cerebrospinal nerves over a mechanism similar to that in which pain is localized over the right upper quadrant.

The pathway explaining inspiratory distress is not entirely clear. It has been proved by Ivy [3] that, in dogs, distention of the gallbladder or common duct produced fixation of the diaphragm. This was partially relieved by section of the right splanchnic nerve and partially relieved by section of the vagus nerve. Section of the vagus seemed to be more efficacious than section of the splanchnic, and it was necessary to cut both nerves to abolish this reflex entirely. The fixation of the diaphragm may be of cortical origin as a protective mechanism against pain.

Two of the patients had no discomfort regardless of the amount of distention of the gallbladder. Ivy recorded a similar observation in some of his experiments on dogs. The experimental observations agree with the clinical that the gallbladder in some patients can be markedly distended with stones without symptoms or with only slight discomfort. It has been shown that gallstones are discovered in about 10 per cent of the women operated on for other conditions who have never had symptoms suggestive of cholelithiasis.[15]

The absence of vomiting following distention of the gallbladder and the presence of this symptom when the common duct was distended is in accord with the observation on animals. Previous experimental work has shown that afferent emetic impulses from the peritoneal cavity travel with equal facility through the vagal and the sympathetic trunks.[16] Perhaps, as Ivy suggests, a difference of threshold exists between the gallbladder and the biliary passages, the nerves of the gallbladder being more difficult to excite.

CLINICAL STUDY

An effort has been made during the past two years to test the clinical significance of our experimental observations. Patients were specifically questioned in regard to vomiting, shortness of breath, and the location and radiation of their initial pain. The 153 surgical cases of cholelithiasis in the Peter Bent Brigham Hospital during this period were divided into five separate groups, according to the probable location of the offending stones (table 2).

The first group consisted of forty-three cases of chronic cholecystitis and cholelithiasis with a negative history for jaundice. A second group included twenty-two cases of chronic cholecystitis and cholelithiasis with history of jaundice in which either the common duct was not explored or no common duct stone was found at exploration. However, the history of jaundice implied that the common duct had at some time been

14. Weiss, Soma, and Davis, David: Afferent Impulses from Skin in Mechanism of Visceral Pain, Am. J. M. Sc. **176**: 517 (Oct.) 1928.

15. Truesdell, E. D.: Incidental Gallstones in Women, Ann. Surg. **98**: 362-368 (Sept.) 1933.

16. Walton, F. E.; Moore, R. M., and Graham, E. A.: The Nerve Pathways in the Vomiting of Peritonitis, Arch. Surg. **22**: 8-9-847 (May) 1931.

obstructed. A stone was found impacted in the ampulla of the gallbladder or in the cystic duct in twenty-three cases of chronic cholecystitis and cholelithiasis. The fourth group included thirty cases of acute or acute and chronic cholecystitis with cholelithiasis. The ampulla of the gallbladder or the cystic duct was obstructed by a calculus in many of these cases. The fifth group comprised thirty-five patients from whom a common duct calculus was removed at operation. In all but the first group, therefore, there was evidence of past or present obstruction of the cystic or common duct.

TABLE 2.—*Cholecystitis and Cholelithiasis*

1932 and 1934	Chronic Without Jaundice	Chronic With Jaundice	Acute	Chronic with Impacted Stone in Ampulla or Cystic Duct	Common Duct Stone
Number of cases....	43	22	30	23	35
Vomiting.....	44.1%	68.1%	73.3%	87.0%	91.0%
Jaundice.....	0	100.0%	20.0%	30.4%	88.5%
Colic.....	97.5%	100.0%	100.0%	91.3%	94.3%
Chills.....	4.6%	9.0%	16.6%	4.3%	31.4%
Inspiratory distress	25.5%	31.8%	26.6%	8.7%	22.8%
Pain in right upper quadrant.....	65.1%	68.1%	53.3%	69.5%	51.4%
Epigastrium.....	30.2%	22.7%	40.0%	21.7%	45.7%
Pain referred to back.....	65.1%	54.5%	40.0%	82.6%	51.8%
Pain in left upper quadrant.....	16.2%	4.5%	0	4.3%	0

A comparison was made of the incidence of vomiting, jaundice, colic, inspiratory distress and the location and radiation of the initial pain and like conditions in the various groups.

The presence of vomiting when the common duct was distended suggested that this symptom might be of value in making a diagnosis of a calculus located outside the gallbladder, especially in the common duct. Involuntary vomiting, and not induced vomiting, was included if it occurred at any time in the present or past illness. Table 2 demonstrates the high incidence of vomiting in those cases in which a stone was lodged or passed through the cystic or common duct. Vomiting occurred in only 44 per cent of the forty-three patients with chronic cholecystitis who gave no history of jaundice and in whom the stone was not found in the ampulla or the cystic or common duct. Obviously it could not be determined in what number of cases a stone might have been lodged in the cystic duct accounting for the history of vomiting. This finding agrees with the views of those who believe that patients with cholelithiasis may have nausea and induced vomiting, but involuntary vomiting indicates that a stone is located outside the gallbladder in the bile ducts. A higher incidence of involuntary vomiting was found in the cases of chronic cholecystitis in which there was a history of jaundice. Apparently in many of these cases a common duct stone had been passed or may have been overlooked at the time of operation. Vomiting occurred in 73.3 per cent of the cases of acute cholecystitis. In a large number of these cases a stone was found impacted in the ampulla of the gallbladder or in the cystic duct, which would account easily for this symptom, as shown in the next group. Involuntary vomiting occurred in 87 per cent of the cases in which a stone was found impacted in the ampulla of the gallbladder or in the cystic duct at the time of operation. The highest incidence, 91 per cent, was found in the cases of common duct stone. Our experimental observations, which showed that vomiting followed distention of the common duct, seems to coincide rather closely with the clinical observations that distention of the bile ducts, by a calculus, produced a high incidence of involuntary vomiting as compared to calculi in the gallbladder. The clinical analysis of patients with cholelithiasis has been convincing enough to make us suspicious of a calculus in the cystic or common duct in cases in which there is pronounced involuntary vomiting. Furthermore, we believe that, when vomiting has been a prominent symptom, exploration of the common duct might be considered regardless of the history of jaundice or size of the common duct, unless at operation a calculus was found impacted in the ampulla or cystic duct.

It has been taught generally that a diagnosis of common duct stone is made when biliary colic is accompanied by the classic triad jaundice, chills and fever. We found that jaundice had occurred at some time in 44.4 per cent of 153 cases. The first group of chronic cholecystitis was selected with a negative history for jaundice and the second for a positive history for jaundice. It occurred in 20 per cent of cases of acute cholecystitis and in 30.4 per cent of the group in which a stone was found impacted in the ampulla or cystic duct. The highest incidence of jaundice, 88.5 per cent, occurred in those cases in which a common duct stone was found at operation. It has been previously emphasized by Clute [17] that jaundice was absent in 39 per cent of his cases of common duct stone. However, in a much larger series of cases reviewed in our hospital we found the incidence of jaundice to remain in the neighborhood of 90 per cent.

Attacks of biliary colic were recorded in a high percentage of all our cases. Perhaps a few of the patients did not actually have a typical colicky type of pain. It is significant to note that not all the patients with common duct stones gave a history of colic. Macdonald [18] has recently emphasized the low incidence of colic in cases of common duct stone. He quotes Wilkie of Edinburgh as believing that patients have colic only when a calculus passes the muscular cystic duct, but no pain in the common duct, owing to the fact that there is insufficient muscular development in the wall of the common duct to produce contraction. We believe that patients with common duct stone generally do have colicky pain, and it might be explained by overdistention of this fibro-elastic tube.

TABLE 3.—*Observations in Three Hundred Cases of Cholelithiasis*

	Cholecystitis and Cholelithiasis		Common Duct Stone*
	Chronic*	Acute*	
Involuntary vomiting.....	29%	87%	89%
Jaundice.....	0	11%	90%
Colic.....	60%	80%	90%
Chills and fever.....	0	12%	15%

* One hundred cases.

There was a low incidence of chills and fever associated with cases of chronic cholecystitis, despite the fact that a moderate number gave a past history of jaundice. Chills were present in 16.6 per cent of the cases of acute cholecystitis and 31.4 per cent of the cases of proved common duct stone. Although chills

17. Clute, H. M.: Common Duct Stones, J. A. M. A. **95**: 1568-1571 (Nov. 22) 1930.

18. Macdonald, I. G.: The Histology of the Biliary Ducts and Its Correlation with the Symptomatology of Common Duct Stone, Surg., Gynec. & Obst. **60**: 775-780 (April) 1935.

have been associated in the classic triad indicating common duct stone, it was found in less than one third of the cases.

Respiratory embarrassment may accompany any type of colicky pain, but I am convinced of its importance in the diagnosis of biliary colic. Schrager and Ivy [3] and Crile [19] have emphasized the clinical value of this symptom in the differential diagnosis of diseases of the gallbladder and biliary ducts from other disorders of the upper portion of the abdomen. That this symptom has not been looked for is evidenced by the fact that it was not mentioned in a review of 300 cases of cholelithiasis at the onset of this study. Respiratory distress was mentioned in about one fourth of our recent cases.

Pain occurred as the initial complaint in the right upper quadrant in about two thirds of all the cases. The high incidence of epigastric discomfort occurred in the acute cases and the cases of common duct stone. I believe that epigastric distress as the initial symptom indicates dilatation of the ducts, and these percentages tend to confirm that belief. It is interesting to note that the incidence of pain in the back, or referred to the back, is practically the same as that occurring in the right upper quadrant. This might be interpreted to mean that patients having sufficient inflammation of the gallbladder to stimulate the parietal peritoneum anteriorly would also have an inflammatory process extending down the cystic duct to the common duct. The somatic nerve supplying the gastrohepatic ligament about the common duct would then refer the pain to the back according to the theory of Morley. The pain was present, or radiated to the left upper quadrant, in 16.2 per cent of the first group of patients who had not been jaundiced, and in a few of the others. The experimental and clinical manifestations of pain of the left upper quadrant were interpreted as an atypical localization of true visceral pain.

TABLE 4.—*Indications for Exploration of Common Duct*

1.	History or presence of jaundice
2.	Cholangeitis associated with cholelithiasis
3.	Recurrent symptoms after cholecystectomy
4.	Frequent attacks of gallstone colic
5.	Pronounced involuntary vomiting
6.	Suggestion of stone by palpation
7.	Dilated or thickened common duct
8.	Contracted, thickened gallbladder
9.	Dilated cystic duct
10.	Thickening of head of pancreas
11.	Many small stones in gallbladder and cystic duct

Table 3 is a compound of a study of 300 cases of cholelithiasis that were studied at the beginning of our experimental observations. They are included here to support the smaller series reported, covering the past two years. Involuntary vomiting occurred in some 29 per cent of the chronic cases of cholecystitis and jumped rapidly to 85 per cent in the 100 acute cases and to 89 per cent in cases of common duct stone. The incidence of jaundice was similar to the smaller group reported. Colic occurred in an increasing proportion in the acute group and common duct stone group. This incidence of colic is probably more reliable than the higher incidence reported in the past two years. Chills and fever were present in only 15 per cent, as compared to 31 per cent of our recent cases.

The clinical analysis appeared convincing enough to make us suspicious of a calculus in the cystic or common duct in cases in which there was pronounced involuntary vomiting. I believe that this symptom should be added to the list of commonly accepted indications for drainage of the common duct, as shown in table 4. The first five indications would be obtained from the history, including the history or presence of jaundice, symptoms of cholangeitis associated with cholelithiasis, recurrent symptoms after previous surgery on the biliary tract, frequent attacks of gallstone colic, and pronounced involuntary vomiting.

At operation the common duct should be explored if there is a suspicion of a stone by palpation, dilatation or thickening of the common duct; contracted, thickened or nonfunctioning gallbladder; dilated cystic duct that would permit stones to pass into the common duct; thickening of the head of the pancreas suggesting a chronic pancreatitis, perhaps the result of a calculus in the common duct, or many small stones in the gallbladder and cystic duct, which might easily pass into the common duct.

I believe that, by keeping in mind the various indications, more common ducts have been explored and that this has been partially responsible for the finding of a high incidence of common duct stones. The common duct was explored in fifty-nine cases, or 38.3 per cent of the 153 cases. The common duct was usually opened after the method of Cheever.[20] A common duct stone was found in 59.3 per cent of the ducts explored, or in 22.8 per cent of the 153 patients operated on during 1933 and 1934. According to the autopsy statistics compiled by Crump,[21] a stone is located outside the gallbladder in more than 20 per cent of cases of cholelithiasis. The finding of a similar number of common duct stones at operation should improve the general end result following operations for cholelithiasis.

CONCLUSION

I believe that our experimental observations indicate that a true visceral pain exists.

Our inability to reproduce referred pain to the back adds weight to the argument that referred visceral pain is usually the result of inflammation, probably over a peritoneocutaneous radiation instead of a viscerocutaneous reflex.

Experimentally and clinically, inspiratory distress commonly accompanies distention of the gallbladder or extrahepatic ducts.

The experimental finding of vomiting following distention of the common duct, but not the gallbladder, has been confirmed by a clinical analysis. Furthermore, I believe that involuntary vomiting should be added to the list of commonly accepted indications for exploration of the common duct.

A common duct stone was found in 22.8 per cent of the patients operated on for cholelithiasis in the Peter Bent Brigham Hospital during the years 1933 and 1934.

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TRANSFUSION FOR JAUNDICED PATIENTS

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Gallstones are supposed to have been removed from the gallbladder of a living patient by Fabricius [1] in 1618, but Petit,[2] who published his discussions on biliary obstruction and its surgical treatment a century later, is often considered to be the founder of surgery of the gallbladder. Great improvements were made in the technic by Bobbs,[3] who sponsored cholecystotomy, and also by Langenbuch,[4] who in 1882 performed the first cholecystectomy on a human being. However, little mention was made of the hemorrhagic tendency of jaundiced patients until Smith [5] called attention to it in 1891. Since that time an enormous amount of information has accumulated and as a result present methods of treatment have a more rational basis. Nevertheless, the problems associated with jaundice have not all been settled, as is shown by the numerous theories concerning the factors involved.

The early investigators believed that the excess of bile pigment circulating in the blood stream was responsible for the hemorrhagic tendency. Morawitz and Bierich [6] observed that when one part of oxbile was added to from ten to fifteen parts of dog's blood in vitro the mixture composed of bile and blood was incapable of coagulation. Since a 10 per cent concentration of bile never occurs in jaundiced patients and since anticoagulant effects were not obtained with lower concentrations, this observation could not be of clinical importance. King and Stewart [7] then offered a different explanation; they suggested that the calcium combined with the bile pigment and rendered it less toxic. Later, King, Bigelow and Pearce [8] concluded that, when the calcium and bile pigment combined, less calcium was available and that this caused interference with the mechanism for coagulation.

Other investigators were equally certain that the bile acids played the most important part in the process because of their ability to inhibit the coagulability of the blood in vitro. Morawitz and Bierich [6] felt that there was not a sufficient concentration of bile acids in the blood of patients to inhibit clotting. Hoppe [9] used 30 liters of urine of jaundiced patients before obtaining a positive test for bile acids, but later experiments have not substantiated his results. Malkoff [10] demonstrated both clinically and experimentally that early in the course of the disease bile acids are present in the urine of patients who have obstructive jaundice but that they tend to decrease in concentration if the jaundice persists. Foster, Hooper and Whipple [11] and Wangensteen [12] made similar observations. Wangensteen [12] also reported that not only did excretion of the bile acids diminish but the synthesis of bile salts was interfered with. The recent work of Brakefield and Schmidt [13] and of Snell, Greene and Rowntree [14] agreed with these results. Therefore it appears safe to assume that neither the bile pigments nor the bile acids per se are responsible for the bleeding of patients who have obstructive jaundice.

Wright [15] was probably the first to suggest the use of calcium in cases of hemophilia and internal bleeding, and Mayo Robson [16] the first to propose its use to stop the bleeding in cases of obstructive jaundice. Boggs [17] found a decrease in the coagulation time after the administration of calcium to rabbits both orally and intravenously. Rey [18] observed a similar phenomenon in dogs. Lee and Vincent [19] found that the addition of calcium chloride to the blood of jaundiced patients in vitro shortened the coagulation time. According to Schmerz and Wischo,[20] the intravenous injection of calcium lactate into normal persons shortened the coagulation time. Walters [21] has emphasized the use of calcium chloride as a preventive of hemorrhage in cases of obstructive jaundice. Kirk and King [22] and Emerson [23] reported a moderate reduction in the total calcium content of the serum in cases of jaundice but found a greater reduction in the ultrafiltrable or diffusible fraction. Buchbinder and Kern [24] noted a reduction in the calcium content of the serum in three cases of jaundice. Favorable results were obtained with parathyroid extract by Cantarow, Dodek and Gordon [25] in the treatment of jaundiced patients who showed a tendency to bleed. In the opinion of these investigators

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the hormone acted as a mobilizer of calcium, which in turn increased the coagulability of the blood and was instrumental in diminishing the permeability of the capillary walls. King, Bigelow and Pearce [8] found changes of osteoporosis in the bones of patients who had obstructive jaundice. However, Halverson, Mohler and Bergeim [26] expressed the belief that reduction of the serum calcium content in jaundiced patients is more apparent than real. In addition, Hammarsten [27] showed that the interaction of thrombin and fibrinogen to form fibrin does not require the presence of calcium. Vines [28] and Stuber and Focke [29] had similar experiences. Snell, Greene and Rowntree [30] found no change in the serum calcium content either in cases of experimental obstructive or in other forms of jaundice. Later, Snell and Greene [31] concluded that there was no correlation between either the total or the diffusible content of calcium of the serum on the one hand and, on the other, either the serum bilirubin or the delay in the coagulation time of the blood in the presence of jaundice. From this discussion it appears that there may be some disturbance of the blood calcium in cases of obstructive jaundice but that its relationship to hemorrhage is rather indirect and at present unknown.

Fonio [32] has administered an extract containing lipoids and blood platelets, which has yielded results in the treatment of jaundiced patients who were bleeding. However, except rarely there is no evidence of a quantitative deficiency of blood platelets either in obstructive jaundice or in hepatic necrosis associated with severe hemorrhagic tendencies. On the other hand, it is possible that there is a qualitative alteration.

Irradiation of the spleen appeared to lower the clotting time of normal blood and led Stephan [33] to employ that plan to stop bleeding. Tichy [34] suggested irradiating the liver. Foster and Whipple [35] expressed the belief that the value of this treatment is attributable to an increase in the blood fibrin content.

Many experiments and clinical observations have demonstrated that the liver has an important function to perform in association with coagulation of the blood. Bohr [36] ligated the celiac and mesenteric arteries and observed that specimens of blood taken four hours later would not clot for two hours. Doyon,[37] Doyon, Morel and Billet [38] and Doyon, Morel and Kareff [39] had similar experiences after injecting atropine into the mesenteric vein of the dog and after administration of overdoses of chloroform. Kerr, Hurwitz and Whipple [40] produced necrosis of the liver in dogs by the subcutaneous injection of phosphorus and found that the blood of the animals would not clot. Doyon and Kareff [41] also excised the livers from dogs and observed that the blood failed to clot. Thus it would seem that there might be something present in the liver which is essential for the clotting of blood.

The bleeding which occurs in cases of jaundice may be attributable to a lack of fibrinogen, as has been suggested. Foster and Whipple [35] stated that the liver is the main potential source of fibrinogen in the body. They showed that although the clotting time does not vary profoundly with a change in the blood fibrinogen content, low values for fibrinogen may be responsible for the clots being too weak to act efficiently. Colbeck [42] also found low values for fibrinogen in some cases of obstructive jaundice, and expressed the belief that in these instances the liver was incapable of responding in a normal manner to a demand for a raised blood fibrinogen content. On the other hand, Williamson, Heck and Mann [43] stated that the liver is not necessary for the regeneration of fibrinogen. Linton [44] observed that in cases of obstructive jaundice there was no deficiency of blood fibrin. In contradistinction to this, Moss [45] and Snell [46] found that there is really an increase in the amount of fibrinogen relative to the extent of the change in the liver, and they concluded that the hemorrhagic tendency of jaundiced patients is not associated with a deficiency of fibrinogen in the plasma.

Some investigators have expressed the belief that the damaged liver of a jaundiced patient produces an excess of an anticoagulant substance that prevents the blood from clotting. Howell [47] expressed the opinion that such a material is responsible for the fluidity of the blood and that an excess may be the cause of hemorrhage in cases of hemophilia and jaundice. Doyon and his co-workers [48] injected atropine, oxbile and bile acids into the mesenteric veins and common bile ducts of animals and produced incoagulability of the blood, but they failed to obtain the same result after systemic injection. Their experiments seemed to substantiate the theory that the damaged liver produces an anticoagulant substance. Boggs [17] also observed that injection of thymus and liver extract from dogs often results in incoagulability of the blood. In addition, Denny and Minot [49] noted that stasis of the blood in the liver

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caused an increase in the antithrombin content of the blood. However, present methods of estimating the concentration of heparin-like substances in the blood are subject to so many errors that the results are not reliable.

According to Carr and Foote [1] the bleeding of jaundiced patients is attributable to seepage through an inefficient clot, although the blood clots as rapidly as normally. They expressed the belief that the clot which is formed is influenced by the collection of intermediate products of protein metabolism, such as cysteine and related forms of mercaptan, so as to produce a non-retractile friable jelly instead of a strong occluding mesh. They employed brombenzene experimentally in the treatment of the bleeding associated with jaundice and had good results. However, the clinical application of this work has yet to be proved.

The fact that hemorrhage with jaundice still occurs, although present methods of treatment have reduced its incidence, shows that further search must be made before it will be possible to eradicate this serious complication completely. The recent work of Snell and Adams [50] has directed attention to several new factors and it is on these phases of the problem that the present paper is based.

THE CLINICAL OCCURRENCE OF THE TENDENCY TO HEMORRHAGE

There is no close relationship between the tendency to bleed and the duration of obstructive jaundice, but in a general way the hemorrhagic tendency is enhanced as the period of obstruction is prolonged. When the obstruction is caused by a malignant process, the liability to hemorrhage is also magnified because of the more extensive hepatic damage that occurs under these conditions. Likewise, the depth of the bilirubinemia does not seem to be an invariable controlling factor in the bleeding, but certainly more severe bleeding is seen in deeply jaundiced patients. Long continued intermittent obstruction also appears to produce a hemorrhagic tendency that is almost certainly the result of progressively increasing damage to the liver. It should also be mentioned that bleeding attributable to hepatic disease has been known to take place in the absence of clinical jaundice. Linton [51] reported observing a hemorrhagic tendency in patients with biliary fistula who did not have jaundice. Judd [52] also encountered this situation several times. In addition, Walters [53] noticed similar phenomena in a case of carcinoma of the liver. However, the tendency to bleed is associated more frequently with severe damage to the parenchyma of the liver, such as is present with acute yellow atrophy or the degenerative changes which occur secondary to biliary obstruction, than with any other type of lesion. These observations suggest that the degree of injury to the hepatic parenchyma may be the most important factor in the production of hemorrhage in cases of hepatic disease. Further credence is also given to such an opinion, for there appears to be no tendency to bleed in cases of hemolytic jaundice, and according to Wangensteen [12] the incidence of spontaneous hemorrhage in cases of catarrhal jaundice is exceedingly low. In both of these conditions the amount of hepatic injury is comparatively slight.

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Almost every one is familiar with the beneficial effects of the transfusion of blood, which are reflected in the decrease in the coagulation time of the blood and in the general improvement of the jaundiced patient. However, the reason for these changes has always been obscure. The method of transfusion employed most frequently at present involves the use of sodium citrate as an anticoagulant. Because sodium citrate in itself has been shown to lower the coagulation time, it might be argued that the improvement that follows the administration of citrated blood is attributable to the sodium citrate. However, this cannot possibly be true, for numerous investigators have found that equally good, or even better, results can be obtained by utilizing whole blood. For several months we adhered to the plan of using whole blood in transfusions in order to obtain comparative data on a large series of jaundiced patients. For a while we thought that there was less tendency to bleed than there had been when we used citrated blood, but further experience seemed to indicate that the transfusion of citrated blood is of as much value as is the transfusion of whole blood. The best method of preventing hemorrhage is to give one or more transfusions of blood before operation; in some cases the transfusion of blood should be carried out both before and after surgical correction of the condition.

It should be mentioned at this point that hepatic insufficiency and renal insufficiency are two other surgical complications that must be kept in mind when jaundiced patients are being treated. Since an injured liver can utilize carbohydrates more readily than it can utilize any other nutrient substance, large quantities of a 10 per cent solution of dextrose should be given intravenously both preoperatively and postoperatively. This measure should be further supplemented by a high carbohydrate diet. The increased intake of fluid, just described, serves a double purpose in the presence of jaundice for it may also improve elimination through the damaged kidney. Some, if not all, of these therapeutic measures should be continued throughout convalescence. Under such a plan of treatment the mortality was only 4.3 per cent following operations performed on jaundiced patients at the clinic in the past year.

The risk of operations on the biliary tract is materially increased if the procedure is undertaken after the development of an obstruction of the biliary tract and of an associated infection in the liver and pancreas. The patients operated on in 1934 illustrate this point very well. In 617 consecutive cases, cholecystectomy or cholecystostomy was performed for acute or chronic disease confined to the gallbladder with the extremely low mortality of 0.97 per cent. This figure may be contrasted with the mortality of 2.65 per cent for 867 consecutive cases in which complicating factors necessitated operating on the common or hepatic ducts. One hundred and seventeen patients in the latter group were jaundiced at the time operation was undertaken.

The operative risk in cases of jaundice deserves further elaboration. In all, 207 jaundiced patients were operated on at the clinic in 1934, with a mortality of 4.3 per cent. Failure to recover was attributable for the most part to hepatic insufficiency or hemorrhage. The variety of measures advocated for the control of the hemorrhagic tendency in the jaundiced patient is in itself evidence of the lack of specificity of any of these measures. Relief from the underlying condition is the first consideration. When possible, operative

measures to relieve biliary obstruction should be instituted as promptly as possible after preoperative preparation. Often cycles of bleeding can be observed, especially if a determination of the coagulation time is made daily or on alternate days. It is well to take advantage of this natural variation in choosing the time for a necessary surgical procedure.

Each of the patients in this series who died had a rather marked degree of jaundice and the serum bilirubin value was more than 5 mg. per hundred cubic centimeters. In two cases the concentration of serum bilirubin was more than 10 mg. per hundred cubic centimeters and in three it was more than 20 mg. There is no known method by which it is possible to determine conclusively whether the liver will resume its excretory function if biliary obstruction is relieved surgically. Consequently, the surgeon is often misled in regard to the risk involved when operative measures are undertaken. In our experience the level for serum bilirubin gives the most information concerning the degree of parenchymal injury. Although patients who have moderate icterus cannot be insured against hepatic insufficiency, and some of those who have marked bilirubinemia may have a comparatively smooth convalescence, in general the higher the value for serum bilirubin the greater the likelihood that serious hepatic injury is present.

It has been observed by several clinicians that deeply jaundiced patients often remain in fairly good condition before operation but that, after surgical relief of the obstruction, intense toxemia develops and is rapidly fatal. The true nature of this condition is difficult to explain. McIndoe and Counseller [54] have described the marked degree of dilatation of the biliary passages that occurs in cases of complete obstruction, as well as the associated parenchymal lesions. They also suggested that there is a reduction in the portal flow of blood, which may be partly responsible for the hepatic cellular atrophy that is seen in these cases. Consequently, when the obstruction is relieved the pressure in the common bile duct decreases and presumably the stasis of the portal circulation is relieved. Increased blood flow through the liver may wash out into the systemic circulation toxic substances resulting from previous hepatic damage, which are injurious to the kidneys and the capillary walls. Although this explanation of "cholemia" or "hepatic insufficiency" is theoretical, it deserves consideration for, except in a few cases, the condition cannot be satisfactorily explained on an anatomic basis alone. Crile [55] and Reid [56] have gone so far as to recommend gradual decompression of the biliary system in such cases.

EFFECT OF REDUCTION IN THE OXYGEN CONTENT OF THE ARTERIAL BLOOD

One cannot help being impressed with the fact that from both a clinical and an experimental standpoint the liver is somehow concerned with the maintenance of the "internal environment" and, when it fails in this respect, a vicious circle is developed, which is instrumental in producing further disintegration of the hepatic parenchyma as well as changes in the physiologic constants of the living organism. Since the liver is intimately associated with the production of certain of the constituents of the blood, it is natural to search for changes that might throw some light on the problem from this source.

While working on the problem of pernicious anemia, Rich [57] noted that there was atrophy of the cells around the central veins of the hepatic lobules, presumably the result of an oxygen deficiency. Both Rich [57] and MacCallum [58] found this same type of atrophy in certain types of chronic passive congestion of the liver. Later, Rich and Resnik [59] reported that atrophy of the cells in the central portion of the hepatic lobule developed if animals were kept in an atmosphere deficient in oxygen. Campbell [60] and Rosin [61] substantiated this work. These observations made it appear of interest to determine the relationship of oxygen deficiency to other hepatic lesions and its influence on the associated hemorrhagic tendency.

The question naturally arises as to whether anoxemia is ever found in patients with clinical hepatic disease and, if so, what its cause may be and what can be done to correct it. Its occurrence and characteristics have recently been studied by one of us,[62] and in this work it was found that anoxemia of the anoxic variety was a fairly constant accompaniment of advanced parenchymal hepatic disease. In a study of nine patients who had obstructive jaundice, it was found that the oxygen capacity of the blood ranged from 9 to 20 volumes per cent and that the arterial oxygen saturation was between 79.8 and 95 per cent. Although proof was lacking, there was some evidence to show that the degree of oxygen unsaturation of the arterial blood in general reflected the condition of the patient. When the oxygen saturation of a patient who had hepatic disease was normal, or nearly so, the patient's general state was usually better than average. On the other hand, most of the very low values of oxygen saturation were found in patients who were showing definite signs of hepatic insufficiency. Finally, it was also shown in a few cases that the percentage of oxygen saturation of the arterial blood returned to a normal level as the hepatic lesion regressed. These facts may be of considerable clinical importance in the treatment of hepatic insufficiency with hemorrhage.

Study of the blood of patients whose livers have been damaged reveals that the anoxemia is usually of the anoxic type, as shown by the low percentage of oxygenation of the arterial blood, and that possibly this is attributable to some change in the pulmonary alveoli causing deficient oxygenation of the reduced hemoglobin. This appears to be the proper explanation, since inhalation of oxygen materially increases the oxygen saturation of the arterial blood. Nevertheless, even on repeated examination, constant changes could not be demonstrated in the lungs to which the anoxemia could be attributed; but it is possible that considerable influence might be exerted by minute changes in the alveolar walls, similar to those observed by Rühl [63] in experimental animals after shock due to histamine.

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56. Reid, M. R.: Drainage of the Common Bile Duct: A Note on a Method of Regulating the External Drainage of Bile, Ann. Surg. **78**: 620-622 (Nov.) 1923.
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63. Rühl, Arthur: Ueber Störungen des Sauerstoffdurchtritts in der Lunge, Arch. f. exper. Path. u. Pharmakol. **158**: 282-303, 1930.

In one case the observation that a transfusion of blood appeared to relieve the anoxemia led to further investigation of the problem. In another instance, repeated transfusion not only increased the hemoglobin content and thus the oxygen capacity of the blood but also improved the percentage of oxygenation of arterial blood. These cases are included in the accompanying table.

Of course these beneficial effects may be ascribable to an improvement in the circulation, but they raise the question of whether the hemoglobin produced by a

Apparent Effect of Transfusion on the Percentage of Oxygen Saturation of Arterial Blood

Patient	Date	Oxygen: Arterial: Capacity	Oxygen: Arterial: Content	Oxygen: Arterial: Saturation, per Cent	Oxygen: Venous: Content	Oxygen: Venous: Saturation, per Cent	Carbon Dioxide, Volumes per Cent, Arterial	Comment
1	9/21/34	11.40	9.40	82.4	7.20	63.1	....	Studies on admission
	9/27/34	14.80	13.30	89.8	12.40	83.7	....	48 hours after transfusion
2	4/25/35	5.40	4.43	82.0	1.90	35.1	41.8	Studies on admission
	4/27/35	7.89	7.40	93.7	....	....	48.2	24 hours after transfusion
	5/ 3/35	8.63	8.15	94.4	5.00	57.5	45.5	29 hours after second transfusion
	5/ 8/35	10.50	9.60	91.4	....	....	43.9	144 hours after last transfusion
3	5/13/35	3.90	3.56	91.2	1.53	32.5	52.6	Studies on admission
	5/14/35	5.69	5.33	93.6	2.79	49.0	54.6	18 hours after transfusion

diseased liver is abnormal. It is known that the liver is intimately associated with the production of hemoglobin, as has been shown by Whipple.[64] Macrocytic anemia has also been demonstrated repeatedly in cases of hepatic disease and this would lead one to believe that the injured liver is not capable of functioning normally in respect to the production of hemoglobin. This defect is chiefly quantitative, so far as is known, for in man hemoglobin is supposed to be of constant composition.

Investigation of the properties of hemoglobin is difficult, but it is possible to approach the problem by

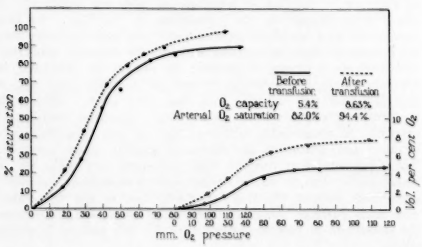

Chart 1.—Oxygen dissociation curves (before and after transfusion) for blood taken from patients with severely damaged livers.

two methods: (1) spectrophotometric study and (2) study of the dissociation curves. In these cases spectrophotometry revealed no abnormalities, such as the presence of methemoglobin or sulphemoglobin, to explain the observed anoxemia. Up to the present, the dissociation curves of blood of patients with severely damaged livers have shown only a slight variation from the normal curves for oxyhemoglobin established by Barcroft,[65] except when there is associated anemia (charts 1 and 2).

In cases complicated by anemia the dissociation curve is somewhat displaced to the right, and in the higher levels of oxygen tension the hemoglobin is not completely saturated; after one or more transfusions the curves have a more nearly normal contour, and because of this fact, and the increased oxygen capacity, the

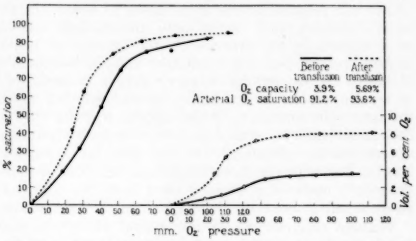

Chart 2.—Oxygen dissociation curves (before and after transfusion) for blood taken from patients with severely damaged livers.

blood is theoretically capable of transporting and delivering more oxygen than before. These dissociation curves have been studied under standard conditions of carbon dioxide tension (40 mm.) and temperature. They suggest but do not prove that hemoglobin is at least changed by admixture with that of normal blood. In other words, the effect of transfusion on a very anemic patient who has hepatic disease is to improve the blood both quantitatively and qualitatively as a vehicle for the transportation of oxygen, the actual amount of oxygen for delivery to the tissues being thus increased. These changes may be attributable to alterations in the carbon dioxide, electrolyte or protein content of the blood, or to changes in its p_H, rather than to changes in the hemoglobin itself; this matter is still under consideration. The importance of these last mentioned factors does not detract from the clinical value of transfusions to patients who have hepatic lesions, for the anoxemic and anemic patient apparently receives more benefit from transfusion than can be attributed to the amount of hemoglobin transferred. In these instances, repeated transfusions and inhalation of oxygen are indicated since they relieve the anoxemia, whether it is of the anoxic or of the anemic variety, and thus protect the hepatic parenchyma from the effect of prolonged low oxygen tensions.

Although it is difficult to determine definitely the true cause of anoxemia in cases in which the phenomenon appears, it is quite likely that it has some effect on the progress of the hepatic lesion. It already has been mentioned that reduced oxygen saturation of the arterial blood, produced experimentally, leads to atrophy of the central portion of the hepatic lobule. It may also render the hepatic tissue more vulnerable to influences that could otherwise have been withstood.

COMMENT AND SUMMARY

Several points in this work deserve additional discussion. Anoxemia is not present in every jaundiced patient, but if jaundice exists the degree of unsaturation appears to have some relationship to the general

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65. Barcroft, Joseph: The Respiratory Function of the Blood: Part I. Lessons from High Altitudes, Cambridge, University Press, 1925; Part II. Hemoglobin, 1928.

condition of the patient. It is also possible that anoxemia, when associated with hepatic disease, may have a deleterious effect on the progress of the hepatic lesion itself. Consequently, if the anoxemia persists, the liver is likely to be extensively injured and as a result the tendency to bleed will be materially increased.

In order to treat the condition intelligently, it should be borne in mind that the anoxemia may be of two types: (1) anoxic anoxia, which can be corrected by placing the patient in oxygen, and (2) anemic anoxia, which will respond to the transfusion of blood. In the latter instance there is not only an absolute anemia, as is shown by the decrease in the amount of hemoglobin present, but also a relative anoxia, because the ability of the hemoglobin to carry oxygen is diminished in certain cases. It can easily be realized that under the latter circumstances, which appear to exist only in the anemic patient, administration of oxygen alone cannot relieve the situation. On the other hand, marked benefit, for which a theoretical basis has been demonstrated, is apparently derived even from the comparatively small amount of blood given in the transfusion.

Without reference to the mechanism whereby anoxemia is produced in cases of hepatic disease, it is apparent that transfusion has a favorable influence on it in at least three ways: 1. More hemoglobin is supplied, thus increasing the oxygen capacity of the blood. It should be remembered that erythrocytosis is one of the physiologic responses to anoxemia, and that because of a deficient production of hemoglobin this cannot readily occur in the presence of advanced hepatic damage. 2. There is a better saturation of the arterial blood with oxygen after transfusion. This may be the result of an improvement in the general circulation or some change in the character of the blood as a physicochemical system. 3. The functional capacity of hemoglobin may be increased by transfusion. This can be shown by a consideration of the dissociation curves, as is expressed graphically in the accompanying charts. As pointed out, this may involve factors other than the hemoglobin itself: the p_H and carbon dioxide content of the blood may be of importance in this respect.

The low mortality among our jaundiced patients in the past year reflects the value of the clinical application of these principles. We feel that the lowered mortality is attributable to the adequate preoperative preparation, the selection of the opportune time for surgical treatment, and the postoperative care as previously outlined. In any case, transfusions of blood have been shown to be of both theoretical and practical value in the control of anoxemia and of the tendency to bleed that is associated with advanced hepatic disease.

ABSTRACT OF DISCUSSION

ON PAPERS OF DR. ZOLLINGER AND DRS. JUDD, SNELL AND HOERNER

DR. F. K. BOLAND, Atlanta, Ga.: Dr. Zollinger's inability to reproduce referred pain to the back from gallbladder lesions adds weight to the argument that referred visceral pain usually is the result of inflammation. Mere distention of a viscus does not cause referred pain to any other part. It is stated that inspiratory distress commonly accompanies distention of the gallbladder or extrahepatic ducts. Does inspiratory distress then aid in the differential diagnosis of lesions of the biliary tract from other diseases of the upper part of the abdomen, such as peptic ulcer and pancreatitis? Is inspiratory distress due to back pressure from the biliary tract into the liver which in turn affects the diaphragm? Obstruction of the common duct is productive of more pronounced symptoms than obstruction of other parts of the biliary tract. Vomiting is more apt to follow distention of the common bile duct than distention of the gallbladder. The recommendation that involuntary vomiting be added to the other indications for exploration of the common duct brings to mind the seriousness of surgery of the common duct. Cholecystostomy and cholecystectomy may give but little trouble, but one should not attempt operations on the common duct without unusual training and experience. In considering pain in the upper part of the abdomen, with or without vomiting, I think of several patients who suffered from violent attacks diagnosed as angina, when thorough study revealed gallstones, and of one patient whose disease was angina and who was operated on for cholecystitis. The radiation of pain accounts for mistakes in diagnosing these conditions, the mechanism of the radiation being explained by the innervation of the heart and the gallbladder through their mutual complicated connection with the vagus and the autonomic system. Dr. Judd and his co-workers have given what appears to be a reasonable explanation as to how transfusion increases the coagulability of the blood in jaundiced patients. There is no hemostatic agent as effective for hemorrhage as transfused blood. Dextrose is helpful in these cases, because a damaged liver can utilize carbohydrates more rapidly than it can any other nutrient substance. I should like to inquire whether it is better to give pure oxygen or to combine oxygen with 5 or 10 per cent carbon dioxide in order to stimulate deeper inspirations. The fact that oxygen increases the coagulability of the blood emphasizes the importance of giving special attention to maintaining a flat abdomen in these patients, because 90 per cent of the gas accumulating in the intestine is eliminated through the blood and lungs and not through the bowel. Therefore I should think that the less the lungs are crowded with this gas the more oxygen they can absorb.

DR. W. J. MERLE SCOTT, Rochester, N. Y.: The explanation by Drs. Judd, Snell and Hoerner of the continuation of bleeding in a patient who has been jaundiced with obstruction over a period of time sounds logical. The height of the jaundice is not the cause of bleeding. I recently operated on a baby with an icterus index of 320, and there wasn't the least tendency in that baby to bleed, from either the muscle or the bed of the spleen. There is one point in regard to damage to liver parenchyma in connection with the explanation that Dr. Judd and his co-authors have given which I have used. After releasing tension on the bile ducts in an obstructive jaundice one has a condition similar to the well known one in the kidneys. Under such circumstances there are hemorrhages in the kidney parenchyma and temporarily, until the circulation of the kidney readjusts itself, there is serious difficulty in that circulation. So I think that also in sudden release of pressure in obstructive jaundice one finds the same type of effect with damage to the circulation of the liver. In two cases with long standing jaundice and very long bleeding time after multiple transfusions and with all the common conservative methods of trying to prepare the patient for operation, it was absolutely impossible to reduce the bleeding time and it was felt that the operative risk was very great. Efforts to perform a cholecystostomy under local anesthesia were successful. A water-tight tube was put in and then the gallbladder was gradually decompressed against water pressure. These patients went through that procedure very well, and it was feasible then to do the larger operation without any difficulty and without bleeding. I think that in the few cases with such extreme jaundice, when there are severe risks from the standpoint of bleeding postoperatively, this method is worth while.

DR. E. S. JUDD, Rochester, Minn.: At the clinic, we administered oxygen subcutaneously in several cases, but we found that it was absorbed so rapidly that we were unable to determine that it accomplished anything worth while. We have not tried injection of oxygen in the treatment of jaundiced patients. The sudden relief of pressure in the biliary system is an important consideration. Allowing all the bile to escape at once is unfortunate. When there is deep jaundice and evidence of great pressure in the biliary tract, it is best to perform cholecystostomy and to release the pressure gradually, as Dr. Scott advises. We have followed this plan in a number of cases and feel that it accomplished a great deal.

BLOOD SUGAR CONCENTRATION AND THE EXTERNAL SECRETION OF THE PANCREATIC GLAND

B. P. BABKIN, M.D., D.Sc., F.R.S.C.
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The relations between external and internal secretions of the pancreatic gland are far from being clearly understood, although some of the data seem to point to a certain connection between them.[1] The data concerning the activity of the acinous tissue of the pancreas during diabetes are very contradictory. Labbé, Nepveux and Adlersberg[2] and Gavrila and Paraschivesco[3] reported a diminution of the enzymatic power of the pancreatic juice activated by intraduodenal introduction of ether in human diabetes. Katsch and von Friedrich[4] found lower tryptic values in one out of five cases of diabetes. Jones, Castle, Mulholland and Barley[5] state that in sixty-eight cases of diabetes approximately half the patients showed a diminution in the digestive power of the pancreatic juice. The poor state of nutrition of some of these patients might have played some part in this phenomenon. According to Deusch and Drost,[6] clinical manifestations of the impaired exocrine function of the pancreas in cases of diabetes mellitus are extremely rare. They may be observed if the diabetes is complicated by pancreatitis, cancer, cysts and the like. In no case of diabetes that they investigated did they find any diminution in the concentration of enzymes in the pancreatic juice.

In experimental animals the results obtained from investigation of the influence of hyperglycemia and hypoglycemia on the pancreatic secretion are likewise conflicting. Savitsch and I,[7] using dogs with a permanent pancreatic fistula, established that, when a solution of hydrochloric acid to which cane sugar had been added was introduced into the stomach, it stimulated a flow of pancreatic juice having a higher concentration of trypsinogen than the juice obtained when acid alone was introduced. In a series of studies La Barre and Destrée[8] and La Barre,[9] by means of a method of cross-circulation whereby it was possible to supply blood from one dog (the donor) to the head only of another dog (the recipient), demonstrated that hyperglycemia in the donor increases and hypoglycemia (insulin, decamethylene diguanidine) diminishes the volume of the pancreatic secretion and the total output of enzymes in the recipient. In order that hyperglycemia might exert a positive effect on the pancreatic secretion, the presence of the thalamic region was essential. On the other hand, Gayet and Guillaumie[10] could observe no increase of the pancreatic secretion when the brain centers were subjected to the influence of hyperglycemic blood.

Collazo and Dobreff[11] reported a small but definite increase of pancreatic secretion in the dog after administration of insulin. Deusch and Drost[6] observed an analogous effect when insulin was administered in man. According to Okada[12] and his co-workers, hypoglycemia stimulates and hyperglycemia inhibits the pancreatic secretion, acting through the vagal centers. On the other hand, Lambert and Hermann,[13] Pénau and Simonnet,[14] Chiray, Lebon and Gozlan,[15] and Fonseca and Carvalho[16] deny the secretagogue effect of insulin on the pancreas. La Barre and Destrée[8] noted a marked inhibition of the pancreatic secretion in dogs after administration of insulin.

This unsatisfactory state of affairs induced us to reinvestigate experimentally some aspects of the complicated problem of the pancreatic function during disturbances of carbohydrate metabolism.

RESULTS

During the last few years we have become interested in the effect of the blood sugar concentration on the secretory activity of the digestive glands, and especially on the output of enzymes from the pancreas in hyperglycemia and hypoglycemia. Experiments were performed on dogs and cats, but chiefly on rabbits. The last-mentioned animal offers great advantages for this type of experiment, since its pancreatic gland secretes continuously and spontaneously.[17] Different anesthetics were used, amytal or pentobarbital sodium being preferred as having the least effect on the blood sugar concentration. In some experiments the spinal cord was cut below the medulla after brief ether anesthetization. The pancreatic duct was cannulated; the adrenals were removed or left intact, according to the requirements of the particular experiment. The concentration of only one of the three principal enzymes of the pancreatic juice was determined, since these enzymes are secreted in parallel concentration by the pancreatic gland in the dog,[18] in man [19] and in the rabbit.[20]

The chief results obtained by us are as follows:

Miss C. O. Hebb established that in the rabbit there is a close parallelism between the degree of glycemia and the concentration of enzymes in the pancreatic juice. The rise or fall of the blood sugar concentration, in spite of the fact that the secretion of pancreatic juice remains very often constant in volume, is accom-

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19. Wohlgemuth, J.: Berl. klin. Wchnschr., 1907, No. 2.

20. Baxter, S. G.: Am. J. Dig. Dis. & Nutrition **2**: 108 (April) 1935.

panied by a rise or fall of the enzymatic activity of the juice. This is evident from several types of experiments. If the blood sugar level is kept constant during the experiment, there is no fall in the concentration of enzymes; e. g., in the case of urethane (ethyl carbamate) anesthesia; if the usual postoperative hyperglycemia gradually diminishes, there is also a slow fall in the enzyme concentration; if the fall of the blood sugar concentration is arrested and it goes up (owing to struggling of the animal, administration of ether and the like), the enzymatic activity of the pancreatic juice remains on the same level or increases.

That it is the concentration of dextrose in the blood that regulates the output of pancreatic enzymes was shown by Miss Hebb in experiments in which dextrose (usually 5 cc. of 20 per cent dextrose solution) was administered intravenously. Without a single exception

TABLE 1.—*Experiment Showing That Concentration of Dextrose Regulates Output of Pancreatic Enzymes* *

Time	Volume of Pancreatic Secretion, Cc.	Corrected Lipase Units†	Total Output of Lipase per Hour	Blood Sugar, Mg. per Cent	Comment
11:00 a.m.-11:30 a.m.	0.4				
11:30 a.m.-12:00 noon	0.3	...	.....	298	
12:00 noon-12:30 p.m.	0.5	810	8,100		
12:30 p.m.- 1:00 p.m.	0.4			233	
1:00 p.m.- 1:15 p.m.	0.2	570	5,700		
1:15 p.m.- 1:45 p.m.	0.25	300	3,000		1:15 p.m., 5 cc. of 3.3% NaCl solution (isosmotic with 20% dextrose solution) injected intravenously
1:45 p.m.- 2:15 p.m.	0.35			143	
2:15 p.m.- 2:45 p.m.	0.4	315	3,150		
2:45 p.m.- 3:15 p.m.	0.3			131	
3:15 p.m.- 3:45 p.m.	0.3				
3:45 p.m.- 4:15 p.m.	0.2	750	7,500		3:45 p.m., 5 cc. of 20% dextrose solution injected intravenously
4:15 p.m.- 4:45 p.m.	0.25			266	

* September 21: Rabbit 2.1 Kg., fasting thirty-six hours; the spinal cord cut below the medulla during brief ether anesthesia; artificial respiration.

† In this and the following table, "corrected lipase units" means the lipolytic power of the pancreatic juice when the dilution factor is taken into consideration. This is calculated according to the formula: $\frac{\text{volume for 1 hour}}{1 \text{ cc.}} \times$ lipase units in 0.1 cc.

the rise in the blood sugar level increased the concentration of enzymes in the pancreatic juice (table 1). In many experiments this occurred when there was no change whatever in the rate of secretion of the juice. From this it would seem that under certain circumstances dextrose may increase the output of organic material and enzymes from the glandular cells without affecting greatly the rate of secretion of the fluid parts of the juice.

The effect of dextrose on the secretory function of the pancreatic gland was found to be specific. Since the intravenous introduction of concentrated solutions of dextrose may change the osmotic pressure of the body and tissue fluids, it was thought that it might also affect in some way the secretory function of the pancreas. However, control experiments with intravenous administration of isosmotic solutions of sodium chloride, sodium bicarbonate and cane sugar did not produce any effect comparable to the effect of dextrose on the function of the acinous cells. As a matter of fact, in many experiments the enzymatic activity of the pancreatic juice was diminished after injection of these substances.

We subjected to thorough analysis the fact of the increased output of enzymes by the pancreas under the influence of dextrose.

The possible excitation of the adrenal secretion by an excess of dextrose in the blood and consequent stimulation of the pancreatic secretion was excluded in the experiments on doubly adrenalectomized animals carried out by Dr. Baxter [21] and Miss Hebb.

Next comes the problem of the passage of dextrose through the acinous cells and the possibly favorable effect thereby produced on the enzymatic activity of the pancreatic juice. The majority of the experimental and clinical investigators are inclined to think that neither after the introduction of a large amount of dextrose into the blood of experimental animals nor in cases of severe diabetes does dextrose appear in the saliva. But, as far as we could ascertain, nothing was known concerning the behavior of the pancreatic gland under similar circumstances.

Miss Hebb clearly demonstrated that the pancreatic acini are much more readily permeable to dextrose than are the secretory cells of the salivary glands. She determined the reducing substances by the Hagedorn-Jensen method before and after yeast fermentation of the protein-free filtrate of pancreatic juice obtained from rabbits, dogs and cats under anesthetics. Dextrose was recovered from the pancreatic juice of rabbits in amounts of from 10 to 50 mg. per hundred cubic centimeters, when the blood sugar concentration varied between 200 and 300 mg. Intravenous injection of dextrose greatly raised the previous values. When, after dextrose administration, the hyperglycemia was 385 mg. per hundred cubic centimeters and over, the concentration of dextrose in the pancreatic juice rose to 100 mg. and higher. Analogous relations were found in the case of the pancreatic juice of dogs and cats secreting under the influence of secretin. When the concentration of the blood sugar was moderate, the pancreatic juice contained sometimes traces, sometimes as much as a few milligrams per hundred cubic centimeters of sugar. These values rose greatly (i. e., as high as 70 or 80 mg. per hundred cubic centimeters) after the intravenous administration of dextrose. The permeability of the pancreatic cells to dextrose was not impaired by atropinization of the animal.

The first step in the analysis of the effect of the blood sugar concentration on the pancreatic secretion was to find out how the increased concentration of dextrose in the pancreatic juice may affect its enzymatic function. It was thought that the increase of the digestive power of the pancreatic juice during hyperglycemia might possibly be due to the favorable action of dextrose, present in the pancreatic juice, on its enzymatic functions. This hypothesis was disproved with regard to the lipolytic and the tryptic activity of the pancreatic juice. The addition of dextrose in various amounts (0.1 cc. of 0.05, 0.1 or 0.2 per cent solutions) to the pancreatic juice did not produce any beneficial effect on the action of lipase or trypsin. No experiments were performed with amylase, but Clark and Edwards [22] reported that the amyloclastic activity of malt diastase was not affected by weak concentrations of dextrose and was inhibited by stronger concentrations.

21. Baxter, S. G.: Quart. J. Exper. Physiol. **21**: 355 (March) 1932.
22. Clark, R. H., and Edwards, H. E.: Tr. Roy. Soc. Canada, **28**: 107 (sec. III) 1934.

The conclusion to be drawn from these experiments is that the increased enzymatic activity of the pancreatic juice in hyperglycemic animals does not depend on the presence of dextrose in the secretion. Therefore the changes in the enzyme concentration of the pancreatic juice after administration of dextrose are due to some processes occurring in the body, probably in the pancreas itself. Since the parasympathetic nervous system, as is well known,[23] regulates the output of enzymes from the pancreatic gland, the effect of atropine was tested. After the administration of atropine the concentration of enzymes usually fell slightly. The injection of massive doses of dextrose together with atropinization did not increase the concentration of enzymes in the pancreatic juice and even failed to prevent its customary fall (table 2). The latter fact is further evidence that the presence of dextrose in the juice, the passage of which substance through the acinous cells is not prevented by atropine, does not increase its enzymatic activity. Therefore it seems justifiable to conclude that dextrose stimulates that function of the acinous cells of the pancreas which is concerned with supplying enzymes to the juice, and that it acts through the medium of the parasympathetic nervous system. Since this effect was observed in animals with the vagi cut, it appears to be mainly of a peripheral nature. However, special experiments are needed to determine whether the central nervous system participates in this phenomenon or not.

The effect of hypoglycemia was studied in our laboratory some time ago by Dr. S. G. Baxter.[21] After the work of Miss Hebb, his data now appear in a somewhat different light. Dr. Baxter established that the hypoglycemic state of the blood provoked by insulin diminishes the discharge of enzymes by the pancreatic gland in the rabbit. Usually the volume of the pancreatic secretion during hypoglycemia also decreased, but in some experiments this decrease was very insignificant or entirely absent. Nevertheless in all cases the tryptic power of the juice gradually diminished with the fall of the blood sugar concentration. To avoid the increased output of epinephrine during hypoglycemia,[24] in most of Baxter's experiments the adrenals were removed or their veins were tied. The effect of hypoglycemia on the discharge of pancreatic enzymes depends on the integrity of the vagi. If both vagi were sectioned, there was an absence of any significant fall in the enzymatic power of the pancreatic juice during insulin hypoglycemia. The volume of the secretion, however, was very often diminished.

Intravenous administration of dextrose in massive doses to hypoglycemic animals with the vagi intact, as well as after section of the vagi, restored the flow of the pancreatic juice if it was inhibited and greatly increased the concentration of enzymes in the pancreatic juice. Moreover, the beneficial effect of dextrose did not depend on the integrity of the sympathetic nerve supply to the pancreatic gland, because it was observed in vagotomized and splanchnicotomized animals.

COMMENT

These investigations firmly establish certain facts concerning the interrelations between the blood sugar concentration and the exocrine activity of the pancreatic gland. In the present unsatisfactory state of our knowledge of the intimate processes taking place in a secreting gland, however, the interpretation of these data is very difficult.

The first fact which must be taken into consideration is that the blood sugar concentration affects separately the "secretory" and "trophic" functions (so designated by R. Heidenhain) of the pancreas. It is the latter function (i. e., the discharge of organic material and enzymes by the glandular cells) that is always stimulated by the excess of dextrose in the blood. The changes in the volume of the secretion are not so constant. Our experiments showed that hyperglycemia influences the "trophic" function of the pancreas always, and its secretory function sometimes, by direct action on the gland itself. In the case of the "trophic" function it acts presumably through the endings of the parasympathetic nerve. However, the possibility of the influence of the central nervous system cannot be excluded. On the other hand, hypoglycemia exerts its effect through the central nervous system. The inhibitory impulses to the acinous cells are discharged along the vagus nerves. From their nature, they may be called "trophic-inhibitory" of "negative-trophic" impulses.

TABLE 2.—*Experiment Showing that Massive Doses of Dextrose After Administration of Atropine Did Not Increase Concentration of Enzymes in Pancreatic Juice* *

Time	Volume of Pancreatic Secretion, Cc.	Corrected Lipase Units	Total Output of Lipase per Hour	Blood Sugar, Mg. per Cent	Comment
11:30 a.m.-12:00 noon	0.3	704	7,040		
12:00 noon-12:30 p.m.	0.3	602	6,020	270	
12:30 p.m.- 1:00 p.m.	0.2	475	4,750		12:30 p.m., struggling; 1 mg. of atropine sulphate intravenously
1:00 p.m.- 1:30 p.m.	0.3			370	
1:30 p.m.- 2:00 p.m.	0.2	430	4,300		1:30 p.m., 1 mg. of atropine sulphate and 10 cc. of 20% solution of dextrose intravenously
2:00 p.m.- 2:30 p.m.	0.3			380	
2:30 p.m.- 3:00 p.m.	0.2	430	4,300		
3:00 p.m.- 3:30 p.m.	0.3			+385	
3:30 p.m.- 4:00 p.m.	0.3	430	4,300		3:30 p.m., 5 cc. of 20% solution of dextrose intravenously
4:00 p.m.- 4:30 p.m.	0.2			+385	
4:30 p.m.- 4:45 p.m.	0.2	264	2,640	...	4:30 p.m., right vagus nerve stimulated in the neck for 15 min.; no effect on the heart

* December 7: Rabbit, 2.4 Kg.; fasting forty-eight hours; pentobarbital sodium; artificial respiration.

All these facts are indicative of a relationship between the blood sugar level and some metabolic processes taking place in the secretory cells during their activity. There are already indications that the carbohydrates play an extremely important part in the processes of secretion. Anrep and Cannan [25] found that stimulation of the chorda tympani or pilocarpine administration increases the consumption of blood sugar by the submaxillary gland of a dog. Höber and Ferrari [26] found that the metabolism of the active submaxillary gland is analogous to that of working muscle. The secretory work depends on carbohydrates and on an organic phosphoric compound present in the glandular tissue and is to a certain degree independent

23. Babkin, B. P.: Die äussere Sekretion der Verdauungsdrüsen, 1928, p. 344.
24. Zunz and La Barre.[1]
25. Anrep, G. V., and Cannan, R. K.: J. Physiol. **56**: 248 (May) 1922; **57**: 1 (Dec.) 1922.
26. Höber, R., and Ferrari, R.: Klin. Wchnschr. **12**: 433 (March 18) 1933.

of oxygen supply. During stimulation of the chorda tympani the concentration of lactic acid and of phosphoric acid in the blood of the glandular vein greatly increases. Still, Bennett and Scott [27] showed that in a dog the secretion of the pancreatic juice activated by highly purified secretin is accompanied by an increased consumption of oxygen. The average respiratory quotient of the resting pancreas is 0.79. During the secretory activity of the gland the average respiratory quotient (extra respiratory quotient) was found to be 1.05. The concentration of lactic acid in the venous blood collected from an active pancreas was increased. All this suggests that the carbohydrate metabolism is increased during the secretory activity of the organ. Undoubtedly further work is necessary in order that the part played by the secretory nerves in the metabolism of a secretory gland may be understood.

What is the explanation of the variety of results obtained in different cases of diabetes mellitus in human beings in relation to the pancreatic secretion? The discrepancy in the determination of the volume of the pancreatic secretion and the enzyme concentration is undoubtedly due in some degree to the unsatisfactory methods employed in obtaining the pancreatic juice from human subjects. Another cause may be the different state of the acinous cells in various cases of diabetes. It is legitimate to suppose that the degree of hyperglycemia in a given case of diabetes will determine the amount of zymogen granules stored in the pancreatic cells and hence the concentration of enzymes in the juice.

SUMMARY

The existence of a close relationship between the blood sugar level and the secretory processes of the pancreatic gland has been established. Hyperglycemia always increases the output of enzymes from the acinous cells and in certain cases increases the volume of the secretion. The effect of hyperglycemia is chiefly peripheral, the parasympathetic nervous system presumably participating in this. Hypoglycemia produced by the administration of insulin lowers the concentration of enzymes in the pancreatic juice. After section of the vagus nerves this effect disappears.

ABSTRACT OF DISCUSSION

DR. A. H. AARON, Buffalo: I have repeatedly determined the lipase and amylase concentration in the B fraction of the duodenal contents in a single individual with achlorhydria. Feeling that these results are as near standardized as can be obtained by usual intubation, I repeated Dr. Babkin's experiment as nearly as possible in this individual. Hyperglycemia was produced and maintained during the drainage of the B fraction by repeated intravenous injections of dextrose. At no time during this experiment did the concentration of ferments increase in the duodenal contents. Determinations for amylase were performed according to Ivy's modification of Willstatter's method, and lipase was determined by the method of Cherry and Crandall.

DR. B. P. BABKIN, Montreal: The methods of collection of pancreatic juice in man are unsatisfactory. What one gets from a duodenum is three or four juices, and besides that one gets fifteen enzymes and activators; so, really, I think that the clinicians will have to find better methods to get the pancreatic juice less contaminated with other secretions, in which it will be possible to determine with a reasonable accuracy the relative concentration of the three principal enzymes.

27. Still, E. U., Bennett, A. L., and Scott, V. B.: Am. J. Physiol. **106**: 509 (Dec.) 1933.

ANESTHESIA FOR THYROCARDIAC PATIENTS

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A thyrocardiac patient is one having thyroid toxicity and significant heart disease. For the purposes of making a study of the end results, significant heart disease has been taken to be (1) auricular fibrillation or flutter, or (2) congestive heart failure.[1] Many most serious cases of heart disease, however, which might appear to be quite dangerous for the administration of an anesthetic, do not fall within this group. For this reason it has seemed best in studying the effect of anesthesia to include in this group not only the aforementioned heart conditions but also cases of coronary disease, angina pectoris, and the two most serious valvular lesions, mitral stenosis and aortic regurgitation. The question of diagnosis will not be considered. All diagnoses have been made by the medical department of the Lahey Clinic. No doubtful diagnoses have been considered, but when a definite diagnosis was made by the medical department this diagnosis has been taken as final.

Our early operations were done with local anesthesia. After a comparatively small series of cases this was gradually replaced by nitrous oxide, and a considerable series of cases was done with this gas. In 1924, following the introduction of ethylene, a change was made to this drug, and the resulting series of cases is by far the largest. Following the work of Waters with cyclopropane we made still another change and now do these toxic heart cases largely under cyclopropane.

In the course of this considerable series of cases under these various anesthetics it is only natural that certain opinions and conclusions should have been formed concerning the value and limitations of these various anesthetics.

Local anesthesia is favored by many and has considerable value in lack of toxicity and in that it does not itself place an appreciable load on the heart. We have found, however, that with these cases in actual practice it has certain definite drawbacks: 1. These toxic patients are nervous and excitable and often react very poorly to the conscious state during operation. We believe that on this account we have seen venous congestion very definitely increase during operative procedures. Of course, preliminary medication helps considerably, but its effect varies so much between different individuals that its results are uncertain and not to be depended on. 2. Anesthesia is inadequate in many cases. The points where it is apt to be inadequate are during elevation of the lateral lobes and during extraction of extensions below the clavicle. Of course a cervical plexus block will take care of most of these points quite well, but the administration of the block itself is too much of an ordeal for these patients to endure. For these two reasons we have found it necessary to augment local anesthesia with a gas anesthetic in the majority of instances. 3. Under local anesthesia the surgeon is more restricted. He does not have the freedom for rapid manipulation and wide exposure that he has under a general anesthetic. For these three

From the Lahey Clinic.

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1. Lahey, F. H., and Hurxthal, L. M.: Postoperative End Results in Three Hundred Thyrocardiacs, Am. J. Surg. **24**: 225-231 (May) 1934.

reasons we believe that in these cases local anesthesia is inferior to certain forms of general anesthesia. It was abandoned quite early in our work with these cases, so that our total experience with it has been comparatively small.

Nitrous oxide is of value in that it does not of itself have appreciable toxic action or place an increased load on the heart. It is, however, inevitably accompanied by at least some degree of anoxemia. This anoxemia increases the load on the heart and at the same time, by decreasing the oxygen supply to the heart muscle, renders the heart less able to carry even the same load. The situation is still further complicated by the fact that these thyrotoxic individuals require more than the normal amount of oxygen and are often somewhat resistant to anesthesia. In addition, nitrous oxide is a comparatively weak anesthetic and does not satisfactorily suppress certain reflex effects. It often happens that considerable manipulation of the trachea is necessary in the course of the operation and that this may produce a strong reflex tendency to cough and laryngeal spasm. If these effects do take place, the resulting anoxemia may be much worse than if a deeper degree of anesthesia had been maintained in the first place. The anesthetist is thus in a quandary as to which of the two courses open to him is the less bad: the light anesthesia, which may at any moment result in spasm and deep anoxemia, or the deeper anesthesia, which carries anoxemia from the start. The situation is bad enough in patients with normal hearts, though here the anesthetist of reasonable skill and experience has sufficient warning of trouble to enable him to bring the patient safely through. But when, as occasionally happens in these cases, the myocardium is seriously damaged and incapacitated, this warning may be reduced practically to zero.

The inevitable tragedy that results has occurred twice in my own experience. These two cases have been reported elsewhere in detail,[2] but the second case has such value as a warning to others that it is worth mentioning again here. After approximately 2,000 thyroid cases under nitrous oxide, this second fatality occurred just eight days after the first one. With the first case thus fresh in mind, I was naturally particularly cautious and alert. Yet, with everything apparently going smoothly and safely, cessation of heart action occurred with an abruptness that appeared absolute.

Our series of thyroid operations under nitrous oxide has been comparatively large and in many respects has been reasonably satisfactory. Nevertheless, in these toxic heart cases, both from theoretical considerations and from practical experience, nitrous oxide appears to be fraught with danger. For this reason and because it has often been extolled as one of the safest anesthetics, I should like to give as my emphatic opinion that in these cases it is a dangerous anesthetic.

It must further be said, however, that the danger lies not in the nitrous oxide itself but in the anoxemia that accompanies it. If one uses preliminary medication or an adjuvant in sufficient amount to avoid this anoxemia, this particular danger is removed. Toxicity or depression may be added, but these appear to be lesser evils than anoxemia. I believe that in cases of damaged myocardium the latter should be avoided absolutely.

Ethylene has for these cases two important advantages over nitrous oxide: It can be used with a considerably larger amount of oxygen and it suppresses much more satisfactorily the reflex effects. The great advantage of these two points will be evident from the discussion of nitrous oxide. Its toxic action appears to be minimum. Our series under ethylene is the largest of any anesthetic and does not include any case in which death appeared to be the direct result of the anesthetic. A small amount of anoxemia frequently accompanies it. This is not enough to be dangerous to the normal heart but should be avoided with the damaged organ. For this purpose sufficient oxygen may be added to overcome the anoxemia, and the desired depth of anesthesia maintained by the addition of a small amount of ether. Of late we have often used cyclopropane as the adjuvant. Either combination makes a very satisfactory anesthetic for these cases. I am unable now to say which is the better.

Cyclopropane appears desirable for these cases because of the unusually large amount of oxygen that can be used with it. Experimental evidence indicates toxic action on the heart in the higher concentrations. Whether in the lower concentrations used in anesthesia this action is of sufficient degree to be of moment or whether it is even present at all is not now apparent. Whatever the reason, certainly there is a marked difference in the immediate postoperative recovery of patients in whom different depths of anesthesia have been given. Those who have been given a minimal degree of anesthesia have had surprisingly few after-effects, while those cases in which a considerable depth has been accomplished often show considerable depression. Reflex effects are controlled quite well even by light degrees of anesthesia.

Not only is the complete avoidance of anoxemia under cyclopropane of advantage but it is even possible that the more than normal percentage of oxygen under this anesthesia may be of further additional value in itself. This possibility is indicated by the work of Barach,[3] who showed that in heart failure, especially of the nonrheumatic type, the employment of 50 per cent oxygen enables many patients to regain their compensation when other measures have failed. This indicates the possibility that abnormally high oxygen during anesthesia may aid the damaged myocardium to handle the strain.

Regardless of the particular drug used for anesthesia, a few general conclusions are justified:

1. Anoxemia is to be avoided especially in those cases presenting a damaged myocardium. This has already been sufficiently discussed but needs to be stressed.

2. Obstruction to respiration is to be avoided. Not only does this tend to the production of anoxemia but the labored breathing which it engenders is just so much extra exertion to the patient and a bother to the surgeon in his work. An efficient airway should be used as a routine. In cases in which compression of the trachea is shown by x-rays it is advisable to use intratracheal anesthesia. Cyclopropane is an excellent anesthetic for the insertion of the tube; but in the really bad risk cases it is better to avoid the considerable depth necessary for this procedure by using local anesthesia of the larynx. This may easily be obtained by spraying 10 per cent cocaine through an airway under light gas anesthesia.

2. Sise, L. F.: Anesthesia for Thyroid Surgery, Anesth. & Analg. **4**: 287-298 (Oct.) 1925.

3. Barach, A. L.: The Treatment of Heart Failure by Continuous Oxygen Therapy, Anesth. & Analg. **14**: 79-88 (March-April) 1935. Barach, A. L., and Levy, R. L.: Oxygen in the Treatment of Acute Coronary Occlusions, J. A. M. A. **103**: 1690-1693 (Dec. 1) 1934.

3. Rather liberal premedication should be used to lessen nervousness and excitement.

4. The stimulating effect of carbon dioxide should be avoided. This we have done satisfactorily by means of the carbon dioxide absorption technic. In a few cases in which the soda lime had become exhausted and had been replaced during the operation by fresh soda lime, the beneficial effects of this procedure have been most strikingly demonstrated.

5. The depth of anesthesia should be nicely adjusted so that, while reflex effects are controlled, the dangers of anoxemia and the depressing or toxic effects of more than minimal depth are avoided.

So important are these points that I believe the proper conduct of the anesthesia in these respects is much more important than any niceties in the choice of the particular anesthetic agent.

TABLE 1.—*Ages of Patients* *

Age	Patients
33 to 39	10
40 to 49	24
50 to 59	40
60 to 69	23
70 to 71	3
	100

* Approximately two thirds are 50 years or over.

TABLE 2.—*Sex*

Female	74
Male	26
	100

TABLE 3.—*Type of Goiter (All Thyrotoxic)*

Primary hyperthyroidism	55
Adenomatous goiter	38
Recurrent hyperthyroidism	5
Adenoma	2
	100

TABLE 4.—*Classification as to Risk*

Grade*	Cases
1	2
2	35
3	62
4	1
	100

* Grade 1 is a good risk, grade 2 a fair risk, grade 3 dangerous and grade 4 a probable fatality. Almost two thirds are classed as dangerous risks.

STATISTICS

In order to make certain facts about these cases more clear and definite I have analyzed and tabulated the last 100 cases. In most respects the tables are self explanatory, but they can be clarified by comment in some instances. The risks are graded from 1 to 4, 1 being a good risk, 2 a fair risk, 3 a dangerous risk, and 4 a probable fatality. These risks are all graded by the anesthetist and are recorded on the chart before operation. When one notes from the tables that almost two thirds of these cases were graded as dangerous and that just about two thirds of the patients were 50 years of age or over, and when one notes the various heart conditions and realizes that, in addition, all these patients were suffering from thyroid toxicity, a fairly clear idea is had that this group as a whole was a decidedly dangerous risk. The serious condition of this group is also indicated in table 5, in which it is seen that multiple stage operations were thought necessary in all but thirteen cases.

COMPLICATIONS AND DEATHS

In considering the complications and deaths, one encounters the usual difficulty in determining how much is due to the anesthetic and how much has nothing whatever to do with it.

One is struck at once by the fact that every one of these patients had auricular fibrillation and that every patient having a complication had, in addition, congestive heart failure. Such cases are particularly prone to the occurrence of emboli. Emboli appear to account for complication 3, temporary hemiplegia, and death 2, sudden death. Complication 1, excessively high pulse rate during anesthesia, was probably due to toxicity and the initial heart condition. Whether any other anesthetic would have proved better is impossible to say. Complication 2, spontaneous pneumothorax, was unusual. One cannot help wondering whether the respiratory obstruction during operation, with probable labored breathing, did not have some causal relationship. Against this view is the large number of cases presenting similar obstruction but without this compli-

TABLE 5.—*Type of Operation* *

Hemithyroidectomy	78
Subtotal thyroidectomy	7
Ligation of superior poles	7
Excision	5
Skin flap (incomplete operation)	1
Muscles cut (incomplete operation)	1
Total ablation	1
	100

* In only thirteen instances was a complete operation in one stage thought safe.

TABLE 6.—*Kind of Anesthetic*

Ethylene	66
Cyclopropane	13
Ethylene-ether	9
Ethylene-cyclopropane	8
Nitrous oxide-ether	3
Tribrom-ethanol-cyclopropane	1
	100

TABLE 7.—*Pathologic Condition of the Heart* *

Auricular fibrillation		84
Congestive failure		33
Mitral stenosis		9
Coronary sclerosis		3
Coronary occlusion		3
Angina pectoris		3
Auricular flutter		1
Aortic regurgitation		1
		137
Auricular fibrillation and congestive failure	28	
Auricular fibrillation and mitral stenosis	4	
Auricular fibrillation and coronary sclerosis	1	
Auricular fibrillation and aortic regurgitation	1	
Mitral stenosis and congestive failure	1	
	35	
Mitral stenosis and auricular fibrillation and congestive failure, 1 case	2	37
		100

* Thirty-six patients had more than one.

cation, which we had in this clinic before our free use of intratracheal anesthesia. No relation to the anesthetic was indicated in complications 4 and 5.

The relation of the anesthetic to the two deaths from thyroid storm must remain an unsolved problem. Thyroid storm is often caused by or accompanied by pneumonia and appears to be related in some way to liver failure, as suggested by Dr. Lahey. Both of these were present in death 1. In this case ethylene-ether was used, though but a small amount of ether was given. In the other case, ethylene was used. This drug is not one that is generally believed to have any tendency to the production of either pneumonia or liver failure. In fact, the causes entering into the production of postoperative pneumonia are still obscure in many respects. On the whole it seems probable that the cause of postoperative thyroid storm lies in the preoperative condition of the patient, the amount of surgery done, and the conduct of the anesthesia, rather than in the particular anesthetic agent used.

The operative mortality of 3 per cent here recorded is not far from that of 4.25 per cent reported by Lahey and Hurxthal in reviewing 300 of these cases in 1933.

COMPLICATIONS

CASE 1.—A woman, aged 53, severely toxic, whose heart was greatly enlarged, had auricular fibrillation and congestive heart failure. On coming to the operating room the pulse became very rapid. She was given cyclopropane, and the pulse rose still further to 200. The operation, therefore, was limited to ligation of the superior thyroid poles. As it was felt that apprehension played a prominent part in the rapid pulse at this operation, at the next stage she was given tribrom-ethanol in her room before coming to the operating suite, and this was followed by cyclopropane for the operative procedure. Nevertheless the pulse rose just the same, in fact reaching this time a high of 215. It was felt best, therefore, by the time the muscles had been cut to conclude the operation. She recovered without further complication.

CASE 2.—A man, aged 45, very toxic, with auricular fibrillation and congestive failure, had marked tracheal obstruction during operation. (Use of the intratracheal method would have been preferable.) Ethylene-cyclopropane anesthesia was administered. At two and three-quarters hours after the operation there was sudden dyspnea and cyanosis. Diagnosis was made of spontaneous pneumothorax, and 1,100 cc. of air was withdrawn. Next day 900 cc. more was withdrawn, and the patient thereafter made an uninterrupted recovery. This patient eventually made a most remarkable improvement over his preoperative condition.

CASE 3.—A woman, aged 49, with auricular fibrillation and congestive failure, on the second day had a sudden hemiplegia. This was considered at the time to be embolic in nature. Recovery was rapid and complete.

CASE 4.—A woman, aged 49, mildly toxic, with auricular fibrillation and congestive heart failure, in early convalescence developed hydrothorax. This was felt to be due to the giving of too large an amount of intravenous fluids. These were stopped and she made a prompt recovery.

CASE 5.—A man, aged 39, with auricular fibrillation and congestive failure, during convalescence had an acute attack of dyspnea and palpitation, from which he recovered spontaneously.

DEATHS

CASE 1.—A man, aged 67, was operated on in two stages, each under ethylene-ether. At the first stage he had auricular fibrillation and congestive failure but made an uneventful convalescence. At the second stage he still had fibrillation but had recovered from the failure. This operation was much more severe than the first stage, as he had an intrathoracic extension on the left the size of a small grapefruit, which descended into the chest and crossed over the trachea to the right side, and which was extricated from the chest only with considerable difficulty. He did well for two days but then had thyroid storm, cyanosis, jaundice and bronchopneumonia, and died. Just which of these complications was primary and which secondary is not clear, but the postmortem examination, which was allowed for the chest only, gave bronchopneumonia as the only cause of death.

CASE 2.—A woman, aged 39, had auricular fibrillation. She had an uneventful operation and convalescence till the fifth day, when she was given 21 grains (1.4 Gm.) of quinidine to control the fibrillation and died very suddenly. Cerebral embolism was thought to be the probable cause of death.

CASE 3.—A man, aged 67, had auricular fibrillation and congestive failure and a very large intrathoracic goiter. His condition was very critical, but operation appeared to be only hope. He died in two days of thyroid storm.

SUMMARY

The ordinary definition of a thyrocardiac condition is enlarged to include coronary disease, angina, mitral stenosis and aortic regurgitation.

Local anesthesia is inferior to the gases because (1) these patients are unusually nervous, (2) anesthesia is inadequate (unless block is used), and (3) the surgeon is restricted.

Of the gases, nitrous oxide is dangerous on account of anoxemia, unless much premedication or an adjuvant is used. The best anesthetics are ethylene, cyclopropane, ethylene-cyclopropane or ethylene-ether. A nice choice between these is less important than the proper conduct of anesthesia. This should include (1) avoidance of anoxemia, (2) avoidance of obstruction, (3) liberal premedication, (4) minimal rebreathing, and (5) nicely adjusted depth of anesthesia.

In our last 100 cases there were five complications and three deaths.

605 Commonwealth Avenue.

ABSTRACT OF DISCUSSION

DR. ANSEL M. CAINE, New Orleans: New Orleans and its surgical territory have few toxic goiters when compared to Boston and the Middle West. We do have them, however, and nearly every toxic thyroid is a cardiac case if of any standing. I agree with Dr. Sise in his conclusions regarding oxygenation. I think we should take it even further than is done in his discussion, that is, treat the case preoperatively and postoperatively with oxygen. Barach has used it to great advantage. The pulse rate and heart action are greatly improved. Oxygen is not discontinued even on the way to the surgery and is commenced again before the patient is returned to bed. Barach again emphasizes this at the oxygen therapy exhibit. Cyclopropane permits oxygen therapy during anesthesia. Too much cannot be said of the importance of an open airway. The surest way to secure this is with an endotracheal tube. Spraying the throat with a 10 per cent solution of cocaine to abolish reflexes is not without danger, unless the patient's tolerance to cocaine is known. No one with whom I have talked here seems to have had trouble. My fifth patient (not thyrocardiac) went into convulsions. These were promptly relieved by intravenous injections of amytal; the temperature, which had reached 103 F., returned to normal in two hours. I saw a death some years ago from swabbing the throat with a 20 per cent solution of cocaine to abolish reflexes for local tonsillectomy. The temperature rose to 108 F. plus. The same week another death took place in Selma, Ala., under similar circumstances. Therefore, the danger is real and not fancied. Premedication, to avoid suspicion on the part of the patient as to the contemplated time of the operation, can be accomplished by giving capsules for "treatment" at a routine time for several days ahead, then duplicating the capsules but changing the contents on the day of operation. The hypodermic injection is given after the patient is asleep from the capsules.

DR. MILTON J. RAISBECK, New York: I heartily endorse Dr. Sise's paper. The factors that hamper the heart are, first and foremost, lack of oxygen. In following cases to the operat-

ing room I have come to the opinion that this problem of lack of oxygen cannot be solved in many cases with nitrous oxide except in the hands of an exceptionally skilful anesthetist. Our knowledge of cyclopropane is limited; it may have some action on the heart, but the large amount of oxygen one is able to give with it and the fact that relaxation is secured apparently with light dosage would appear to give it an advantage over other anesthetic agents, although ethylene has been the one with which I have had the most experience. The second source of danger for the heart is the production of spasm or any violent muscular effort. The type of heart that cannot stand mechanical stress is chiefly the older arteriosclerotic heart, one with a history of anginal pain or coronary disease. The anesthetic that produces rapid and easy relaxation would thus have an advantage. The third factor that may increase the cardiac burden is a rise in blood pressure, but I do not feel that this is as important as the others. I have observed a rise in blood pressure during operation to quite a considerable height without affecting the heart adversely. Of course a rise in blood pressure may be associated with lack of oxygen and then the effect is certainly harmful. The problem is up to the anesthetist, and it depends on his skill rather than on the qualities of the agent itself. The bad risks that I have observed all showed auricular fibrillation and/or congestive failure. In my experience fibrillation is an added risk but not a great one, whereas congestive failure is a serious factor. If the patient has to go to operation with moisture at the lung bases and with enlargement of the liver, or with edema anywhere, he is a very bad risk. There is one hint that may be useful. Incipient failure may be detected in the absence of physical signs by determining the circulation time. If decholin is injected in the vein at the elbow, the patient will report a bitter taste normally within eighteen seconds. Gluside can be used in a similar way and is somewhat cheaper. If the circulation time, as revealed by this test, is markedly slow even without objective evidence of heart failure, the patient is going to be more than usually sensitive to the lack of oxygen, mechanical stress or any of the other hazards of anesthesia and will therefore demand special attention.

DR. S. C. WIGGIN, Boston: I agree with everything that Dr. Sise has said about nitrous oxide in thyrocardiac and thyroid cases in general. I am glad that Dr. Sise modified the first statement that nitrous oxide is dangerous in thyrocardiac patients with the statement that it can be used if sufficient premedication and an adjuvant are administered. At the Faulkner Hospital we have had about 150 thyroid patients in the past two years, including more recently a small percentage of thyrocardiac patients with cardiac deficiency. I have limited the use of morphine in these cases because I find that they do not need the total dose, the larger doses which the hyperthyroid or the tumors of the thyroid need. In the operating room, instead of starting with gas-oxygen, I oxygenate the patient first with plenty of oxygen and then I am able to put him to sleep with a low concentration of nitrous oxide. The surgeon thoroughly infiltrates the thyroid region with 1 per cent solution of procaine hydrochloride, which enables me to use a very light concentration of nitrous oxide and oxygen, probably more than a deep sleep. In cases of auricular fibrillation I have noticed the blood pressure come down from a high level. One patient started with a pressure of 190; in the course of about twenty minutes it was down to 120 and her pulse, starting at 120, came down to 80 and the clinical course ran level to the end of the operation. If nitrous oxide is used discreetly in these cases, it is of value.

Eugenics.—Sir Francis Galton, the founder of the science, was also the founder of the first modern eugenics society: "The Eugenics Education Society of Great Britain." In the leadership of this society, Sir Francis Galton was succeeded by Major Leonard Darwin. By 1912 the scientific advance of eugenics in many different countries seemed to warrant an international congress. . . . Accordingly, the first International Congress of Eugenics duly assembled in London in July 1912.—Laughlin, H. H.: Historical Background of the Third International Congress of Eugenics: A Decade of Progress in Eugenics, Baltimore, Williams & Wilkins Company, 1934.

FACTORS CAUSING BRONCHIECTASIS

THEIR CLINICAL APPLICATION TO DIAGNOSIS AND TREATMENT

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TORONTO, ONT.

Bronchiectasis may be defined as a condition in which the bronchial tubes are dilated beyond their normal size. The pathologic process present practically always produces symptoms, the commonest being chronic cough and sputum. Most cases of bronchiectasis were diagnosed "chronic bronchitis" until 1922, when Sicard and Forestier [1] discovered the usefulness of iodized oil, which was radiopaque and could readily be injected into the bronchial tree without danger, and bronchial dilatation could be diagnosed with certainty. It is since then that our knowledge of this disease has progressed markedly. Recent studies have shown more clearly the pathologic process involved in bronchiectasis. This work will be reviewed and the interpretation of signs and symptoms on this pathologic basis will be discussed, as well as the rationale of treatment.

ETIOLOGY OF ACQUIRED BRONCHIECTASIS

In a recent survey of 110 cases of bronchiectasis, which have been thoroughly studied and followed for varying periods of time up to eight years, it was found that the bronchiectasis began with a known illness in 59 per cent: pneumonia, 30 per cent; lung abscess, 12 per cent; influenza, 5 per cent; whooping cough, 4 per cent; "acute bronchitis," 3 per cent; measles, 2 per cent; bronchogenic carcinoma, 2 per cent; foreign body, 1 per cent. In 41 per cent of the cases the onset was insidious, there being no history of any acute respiratory infection immediately preceding the onset of bronchiectasis. However, the frequency of an acute respiratory disease preceding the bronchiectasis and the character of the general and local symptoms during the course of the disease strongly suggest infection as the important etiologic factor.

The next question is What tissue in the lung is primarily affected by this infection? The hypothesis of Andral [2] and Stokes [3] was that the primary cause of bronchiectasis is a weakening of the bronchial wall with subsequent dilatation. Later, Corrigan [4] and Hamilton [5] were the first to advance the theory that in bronchiectasis the primary fault is in the parenchyma of the lung, the bronchi dilating secondarily to fibrosis in the parenchyma and to pleural adhesions.

Recent work has done much to determine which of these theories is correct. Warner and Graham [6] have demonstrated from observations on bronchiectatic lobes at operation and after removal (lobectomy) that bronchiectasis may occur without either fibrosis of the lung or pleural adhesions being present. Further evidence in support of this fact was obtained by the same investigators when they observed lobar atelectatic bronchiectasis appear in such a short time that the more chronic process of fibrosis could not account for it. Having

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1. Sicard, J. A., and Forestier, J.: Bull. et mém. Soc. méd. d. hôp. de Paris **46**: 463 (March 17) 1922.
2. Andral, G.: Clinique médicale, Paris **2**: 22, 1824.
3. Stokes, W.: Treatise on the Diagnosis and Treatment of Diseases of the Chest, Dublin, 1837.
4. Corrigan, D. J.: Dublin M. J. **13**: 270, 1838.
5. Hamilton, D. J.: Practitioner, London **22**: 426, 1879.
6. Warner, W. P., and Graham, Duncan: Lobar Atelectasis as a Cause of Triangular Roentgen Shadows in Bronchiectasis, Arch. Int. Med. **52**: 888 (Dec.) 1933.

excluded fibrosis of the lung and pleural adhesions as necessary factors in the production of bronchiectasis, they turned to a consideration of a possible weakening of the bronchial wall. From the examination of surgically removed bronchiectatic lobes, Robinson[7] has shown that the most marked and consistent pathologic finding is chronic inflammation of the bronchial wall, often with complete destruction of the muscle and elastic tissue. Greey[8] made a bacteriologic study of the same material and found a variety of organisms present. He concluded that no specific organism produces the infection which causes damage to the bronchial wall. It is my opinion, therefore, that the initial fault in bronchiectasis is damage and subsequent weakening of the bronchial wall, probably caused by a nonspecific infection.

Forces Causing Physiologic Bronchial Dilatation.—Given a weakened bronchial wall with loss of elastic and muscle tissue as the primary fault in bronchiectasis, there must be some mechanical reason for the bronchus to become dilated. There have been many explanations offered for this bronchial dilatation, but I believe that there is a simple and adequate explanation.

Physiologic bronchial dilatation has been described by Macklin[9] and others. By bronchoscopic examination and by roentgen examination with iodized oil in the bronchial tree it may be seen that a normal bronchus becomes dilated during inspiration and narrowed on expiration. This physiologic dilatation on inspiration is brought about by forces that are the chief cause of permanent or pathologic dilatation occurring in bronchiectasis. These forces are, first, the direct pull of the expanding thorax on the bronchi, transmitted through the parenchyma; second, the difference in pressure between that in the lumen of the bronchus and that outside its wall occurring on inspiration. On expiration the bronchus becomes narrowed, owing to its elastic tissue, which becomes effective with the cessation of the forces causing dilatation.

The forces causing physiologic dilatation acting on a bronchus which has lost much of its elastic and muscle tissue, such as occurs in bronchiectasis, will cause a greater dilatation than normal on inspiration, since there is not the elasticity to overcome. The bronchus will not return to its normal expiratory size with the cessation of the dilating forces, since its power of contraction is diminished on account of the loss of elastic and muscle tissue in its wall. Therefore the forces causing physiologic dilatation, if applied to a weakened bronchus, as found in bronchiectasis, will cause permanent or pathologic dilatation.

Added Factors Occurring in Bronchiectasis That Help to Cause Pathologic Bronchial Dilatation.—Besides the forces of physiologic dilatation there are certain added factors in bronchiectasis that help to cause pathologic dilatation. These factors are atelectasis of the parenchyma, fibrosis of the parenchyma, and central bronchial obstruction. They increase the normal dilating force and may be of considerable significance in determining whether permanent dilatation (bronchiectasis) will occur or not.

1. Atelectasis: Atelectasis of the parenchyma of the lung, which in my experience is of fairly common occurrence in bronchiectasis, increases the forces causing permanent bronchial dilatation in several ways. The pull of the expanding thorax on the bronchi will not be lessened by the intervening, inflated elastic parenchyma but will be transmitted directly to the bronchus through the solid atelectatic lung. There will result a greater pull on the bronchus. Also, with atelectasis, there will be a greater than normal pressure difference between that in the lumen of the bronchus and that outside its wall on inspiration. The increased intrapleural pressure found in atelectasis must be an index of increased pull on the bronchus and a greater pressure difference.

The normal telescoping movements of the bronchi and the passage of air through their lumens into and from the parenchyma on respiration are important factors in draining the bronchi of secretion. Atelectasis of the parenchyma, by interfering with the free passage of air along the bronchi and also with bronchial movement, causes a stagnation of secretion in the lumens. This secretion present in bronchiectasis has been given as one of the causes of the dilatation of the bronchi by its own weight or pressure, but this effect must be extremely slight. However, the infected material in the lumen of the bronchus must favor further infection of the wall of the bronchus, thus promoting increased weakening of the bronchial wall.

It is conceivable that a bronchus weakened by infection, such as occurs in bronchiectasis, might have the power to withstand some dilating force and not become permanently or pathologically dilated. However, if the bronchus is persistently subjected to the forces causing physiologic dilatation, and particularly if these forces are augmented by those which accrue as a result of atelectasis, permanent dilatation will result.

2. Fibrosis of the Parenchyma: This is considered by many to be the chief cause of bronchiectasis. I believe that fibrosis and pleural adhesions when found in bronchiectasis are only supplementary factors increasing the physiologic dilating forces. They are rarely, if ever, the primary cause of the trouble in bronchiectasis. Fibrosis of the parenchyma will increase the dilating force in much the same way as atelectasis. There will be an increased direct pull on the bronchus as the force of the expanding thorax is transmitted directly through the solid lung. Also, as the parenchyma will be incapable of changing its air content on respiration, there will be very little flow of air along the bronchi, with subsequent stagnation of secretion and further damage to the all important bronchial wall.

3. Central Bronchial Obstruction: This condition, in my experience, rarely occurs in bronchiectasis. However, a new growth or foreign body causing central obstruction is found in a definite percentage of cases. When this central bronchial obstruction is partial, it may produce a ball valve action. That is, on inspiration the lumen of the bronchus will widen at the site of the obstruction and allow air to pass distal to it. On expiration, the lumen of the bronchus will narrow and the central obstruction will either be increased or be made complete as the edge of the obstruction approaches the bronchial wall opposite to it. Thus, air will be partially or completely trapped in the bronchus distal to the obstruction. The slightly positive pressure present in the normal bronchi on expiration will be dissipated through the trachea into the atmosphere, whereas the positive pressure in the obstructed bronchus cannot be so readily equalized. Also, the return of the bronchus to its normal expiratory narrowed lumen, chiefly by elastic recoil, will be hindered by the entrapped air.

7. Robinson, W. L.: Brit. J. Surg. **21**: 302 (Oct.) 1933.
8. Greey, P. H.: The Bacteriology of Bronchiectasis, J. Infect. Dis. **1**: 203 (March) 1932.
9. Macklin, C. C.: The Dynamic Bronchial Tree, Am. Rev. Tuberc. **25**: 393 (March) 1932.

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These factors will aid in the production of permanent or pathologic dilatation. Central bronchial obstruction has its greatest effect in causing bronchial dilatation during coughing, and especially if there is also peripheral bronchial obstruction or parenchymal fibrosis. Coughing without central bronchial obstruction increases the dilating force only because of the forced inspiration that precedes the closing of the glottis. The forces causing physiologic dilatation are greater with this forced inspiration than on quiet breathing. There appears to be no reason why that part of the coughing act during which the glottis is closed, or during which expiration is taking place, should cause dilatation unless there is central bronchial obstruction. The marked bronchial movements caused by coughing will also tend to cause permanent dilatation, because the bronchus with its decreased elasticity is further weakened by excessive movements. Also, as in atelectasis and fibrosis, the central bronchial obstruction interferes with proper drainage of secretion from the affected bronchus, with resulting damage to the bronchial wall.

CONGENITAL BRONCHIECTASIS

I have discussed the causes of permanent bronchial dilatation in acquired bronchiectasis. In practically all

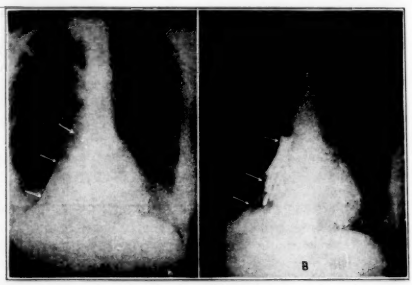

Fig. 1.—Lobar atelectatic bronchiectasis. *A*, plain roentgenogram showing triangular basal shadow in costodiaphragmatic area, which is diagnostic of bronchiectasis. *B*, after the injection of iodized oil into the bronchial tree, showing the main bronchus to the right lower lobe communicating with dilated bronchi, which are seen only in the area of the shadows.

cases of bronchiectasis, infection of the bronchial wall with destruction of its elastic and muscle coats is the primary fault and the bronchus subsequently becomes dilated, as a result of the factors considered. However, from time to time, reports appear of cases of congenital bronchiectasis supposedly the result of congenital or growth defects.

Congenital bronchiectasis should be diagnosed, either pathologically or clinically, with a great deal of hesitation. Henke and Lubarsch [10] sum up the evidence by which congenital bronchiectasis may be diagnosed pathologically by stating that it is extremely difficult to be sure that bronchiectasis is congenital unless it is found in a fetus or new-born baby. Many of the cases diagnosed clinically as congenital I believe are acquired. Recently, I [11] described a series of cases of massive one-sided bronchiectasis showing many common characteristics. Cases similar to these have been described as congenital in origin, but they may be adequately explained as acquired bronchiectasis, the permanent bronchial dilatation occurring because of factors already outlined. In this particular group of cases the added factor is, I believe, massive atelectasis of the parenchyma of one lung, and I have termed them "massive atelectatic bronchiectasis." The known etiologic factors causing acquired bronchiectasis may explain the origin of practically all cases of bronchiectasis. It seems unnecessary to postulate as a cause of bronchiectasis congenital defects, which usually cannot be proved either clinically or pathologically.

SYMPTOMS

The most common local symptoms of bronchiectasis are a chronic cough and sputum. There are certain characteristics about these symptoms that are almost diagnostic of bronchiectasis. Since this disease is a primary infection of the bronchus with marked destruction of its wall, one would expect that the cough reflex could not be elicited from it. The secretions in the diseased bronchi do not cause the cough reflex unless they leave these bronchi either by overflowing or by changes in posture, causing them to spill over into normal bronchi capable of causing a cough.

The character of the sputum is also significant. Formerly the classic picture of bronchiectatic sputum was about 1 pint of foul-smelling sputum, which separated into three layers on standing. This type of sputum is exceedingly rare. The average amount in our cases has been 4 ounces a day and only 20 per cent of our bronchiectatic patients have foul-smelling sputum. However, there is one characteristic which is extremely suggestive of bronchiectasis and that is that the sputum is "chunky." This characteristic is explained by the fact that the diseased bronchus has lost to a great extent its normal movements which tend to flatten out excess secretion along the wall of the bronchus. The secretion tends to stagnate and the slight bronchial movements and small passage of air along the dilated bronchi allow the formation of this chunky sputum. Blood spitting is exceedingly common in bronchiectasis and occurred in 45 per cent of our cases. The infection in the bronchial wall after it has caused destruction may become so attenuated that no excess secretion is formed and "dry" bronchiectasis results. These cases without a cough or sputum are very uncommon and occurred in only 2 per cent of our series. The classic local symptoms of bronchiectasis, then, are a cough and sputum influenced by posture and the sputum moderate in amount, often accompanied by blood spitting and usually not foul smelling but practically always chunky.

The general or systemic symptoms are dependent chiefly on the condition of the parenchyma of the lung. A typical history of bronchiectasis is found in the patient in the twenties or thirties who consults a physician regarding a cough and chunky yellow sputum influenced by posture, which he has had since childhood following an attack of pneumonia or whooping cough. He has enjoyed excellent health and with the possible exception of one or two attacks of pneumonia is not bothered by anything but this constant cough and sputum. There is infection in the patient's bronchi but he has been fortunate in that the parenchyma of the lung has escaped to a large extent the infection permanently present in the walls and lumens of the bronchi. On the other hand, there is the patient who has chronic ill health due to spread of infection from bronchi to parenchyma, with resulting chronic low grade pneumonia. Acute pneumonia occurs frequently

10. Henke, Friedrich, and Lubarsch, Otto, editors: Handbuch der speziellen pathologischen Anatomie und Histologie, Berlin, Julius Springer **3**:1, 1928.
11. Warner, W. P.: Quart. J. Med. **3**:401 (July) 1934.

in the bronchiectatic lung: 52 per cent of our cases presented at least one attack and 27 per cent more than one attack after the onset of bronchiectasis. Bronchiectatic patients may also be greatly incapacitated because of repeated massive hemorrhages or be social outcasts due to fetid sputum.

SIGNS

Since the essential pathologic change in bronchiectasis is infection damaging the bronchial wall, one would expect the common physical signs to be dependent on this rather than on any parenchymal change. Dilated bronchi with excess, almost stagnant, secretion produce medium crackling râles, which are by far the commonest physical sign in bronchiectasis. These râles are usually heard in the lower lobes, since bronchiectasis usually attacks these lobes: in only 2 per cent of our cases was it entirely located in the upper lobes. The parenchyma may be affected by chronic bronchopneumonia with resulting fibrosis, so that the physical signs of consolidation and fibrosis are present. Also the parenchyma may become atelectatic. Lobar atelectasis occurred in 16 per cent of our series and in about half of these the atelectatic bronchiectatic lobe could be diagnosed clinically as an area exhibiting impaired resonance, bronchial breath sounds and medium crackling râles, situated posteriorly along the spine and extending out in a triangular shape to the base of the lung. The common physical sign in bronchiectasis is the medium crackling râles persisting at one or both lower lobes.

ROENTGEN EXAMINATION

In bronchiectasis plain roentgen examination of the chest is usually negative or some thickening of the descending bronchial trunks may be observed. This is in keeping with the etiologic conception that bronchiectasis is a primary bronchial disease. So often is the roentgen report negative that its chief value lies in helping to rule out such conditions as tuberculosis as a cause of the patient's symptoms. When certain secondary changes, such as chronic bronchopneumonia and fibrosis, occur in the parenchyma, roentgen evidence becomes of value. If lobar atelectasis occurs in bronchiectasis, a triangular basal shadow (fig. 1) is observed, which is diagnostic of this disease. These triangular basal shadows occurred in 16 per cent of our cases. They are the best diagnostic criteria found in plain roentgenograms of the chest in patients having bronchiectasis. These shadows were first described by Comby [12] and have been studied by Singer and Graham,[13] Rist, Jacob and Trocmé,[14] Sergent and Bordet,[15] Wallgren,[16] and others. They have been considered due either to fibrosis of the bronchiectatic lung or to atelectasis of the parenchyma about the dilated bronchi. Graham and I [6] found that these shadows have always represented a shrunken lobe containing bronchiectatic bronchi. We found that the bronchiectatic lobe was shrunken and took the shape that caused a triangular shadow on the x-ray film because of atelectasis of the parenchyma, not because of fibrosis. This atelectasis was due to inflammatory swelling of the walls of the peripheral bronchioles causing occlusion of their lumens with resulting deflation of the lung.

The other plain x-ray picture that is diagnostic of bronchiectasis is seen in massive atelectatic bronchiectasis (fig. 2). The thin whorl-like shadows present from apex to base, with mediastinum shifted to the affected side, are diagnostic of this unusual type of bronchiectasis.

Roentgen examination after injection into the bronchial tree of a radiopaque oil is the important diagnostic procedure to prove or disprove the presence of bronchiectasis. This simple procedure, almost devoid of danger, has been discussed elsewhere [17] and will not be considered further here.

PROGNOSIS

It is obvious that the prognosis in bronchiectasis depends on the extension of the infection into the parenchyma of the lung or to other parts of the bronchial tree, or on the occurrence of massive pulmonary hemorrhage. So typical are the symptoms of bronchiectasis that I believe that the onset may in most cases be accurately determined from the history. By this means the duration of the disease, up to the time of writing, in our series of bronchiectasis cases is estimated at ten years, the longest forty-two years. Patients may have bronchiectasis almost all their lives and die of some other disease. On the other hand, 23 per cent of our patients are dead after having the disease for an average of nine years: the shortest

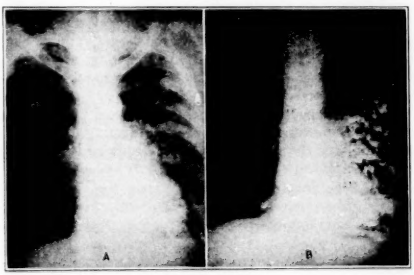

Fig. 2.—Massive atelectatic bronchiectasis. *A*, plain roentgenogram showing whorl-like shadows evenly distributed, which are characteristic of this type of bronchiectasis. *B*, saccular dilatations visualized after the injection of iodized oil.

duration in these fatal cases was three months. It is evident, therefore, that the prognosis varies tremendously with the individual case, from one with disease rapidly progressing to a fatal termination to one with practically no progression or disability.

TREATMENT

It is not within the scope of this paper to go into details regarding treatment: some points arising as a result of this etiologic conception will be considered. It appears logical that if the physiologic dilating forces or any of the added factors causing bronchial dilatation could be held in abeyance during the time that the infection is acute and active in the bronchial wall, permanent dilatation might not occur. Artificial pneumothorax, for instance, by decreasing the dilating forces in acute bronchiectasis, might protect the bronchus until the infection subsides in its wall and it is able to withstand such dilating forces without becoming permanently dilated. In chronic bronchiectasis when permanent or pathologic dilatation has occurred, little can be expected from collapse therapy. When central bronchial obstruction can be removed this should be done,

12. Comby, J. Bull. Soc. de pédiat. de Paris **23**: 385, 1925.
13. Singer, J. J., and Graham, E. A.: J. Missouri M. A. **19**: 390 (Sept.) 1922.
14. Rist, E.; Jacob, P., and Trocmé, P.: Ann. de méd. **21**: 144 (Feb.) 1927.
15. Sergent, Emile, and Bordet, F.: Bull. et mém. Soc. méd. d. hôp. de Paris **51**: 742 (June 2) 1927.
16. Wallgren, Axel: Beitr. z. Klin. d. Tuberk. **69**: 641, 1928.
17. Warner, W. P.: Canad. M. A. J. **27**: 583 (Dec.) 1932.

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thus eliminating a factor causing increased dilating force and impaired bronchial drainage.

When bronchiectasis has become established, with secondary changes in the parenchyma, medical treatment consists of draining the dilated bronchi. This can be accomplished most satisfactorily by adequate postural drainage. Bronchoscopic drainage is of use chiefly as a means of improving postural drainage by removing some central bronchial obstruction, such as a foreign body, growth or granulation tissue.

Surgical treatment has made tremendous advances in recent years. When permanent or pathologic dilatation has taken place, surgical removal of the diseased lung is the only method of "cure," as the bronchi never return to their normal size by other forms of treatment. However, with such a high operative mortality still present in lobectomy, the patient must have considerable disability before operation is advised.

CONCLUSIONS

1. The primary fault in bronchiectasis is a nonspecific infection of the bronchial wall causing destruction, particularly of the muscle and elastic tissues present.

2. The weakened bronchus then becomes permanently dilated, owing to the forces causing physiologic bronchial dilatation.

3. There are certain added factors: atelectasis of the parenchyma, fibrosis of the parenchyma, and central bronchial obstruction, which increase this physiologic dilating force and tend to produce permanent or pathologic dilatation.

4. The conception of bronchiectasis as a primary disease of the bronchus secondarily affecting the parenchyma alters the interpretation of signs and symptoms and the application of therapy.

100 College Street.

ABSTRACT OF DISCUSSION

DR. DAVID T. SMITH, Durham, N. C.: I have been studying bronchiectasis for the last ten years and agree with Dr. Warner's statement that the primary fault in bronchiectasis is an infection of the bronchial wall with destruction of the elastic and muscular coats. I am particularly interested in the types of infection that can destroy the elastic tissue and muscle in the bronchial wall. The tubercle bacillus can and occasionally does destroy the bronchial wall and produces the iodized oil picture of bronchiectasis. Staphylococci necrotize pulmonary tissue and can probably destroy elastic tissue and muscle in the bronchi. The fusospirochetal group of organisms that ulcerate the tonsils, necrotize the lung and destroy bone can undoubtedly destroy the elastic and muscular coats of the bronchi. Chevalier Jackson has seen this occurring in the bronchi of man through the bronchoscope and I have produced the iodized oil and pathologic picture of bronchiectasis in rabbits with the fusospirochetal organisms. In 1930 I reported a series of sixty cases of bronchiectasis in which the lesion was demonstrated by the injection of iodized oil. Forty-nine of the sixty cases showed fusiform bacilli and spirochetes in the sputum. These cases were under observation for many months and had repeated sputum studies. In a general hospital, where the patients cannot have repeated examinations for such long periods, one would not expect to find as high a percentage of fusospirochetal organisms. As a check on my own enthusiasm for these organisms I collected the results of the sputum studies on the cases of bronchiectasis seen in the Duke Hospital during the last four years, the examinations being made by the regular house staff and routine laboratory. The bronchiectasis was diagnosed in thirty cases by injections of iodized oil and in two at necropsy. Spirochetes and fusiform bacilli were found in the sputum in eighteen cases. Staphylococcus aureus was found in eight cases and various types of other organisms in six cases. When fusiform bacilli and spirochetes are present in the sputum, I believe that the postural drainage treatment should be supplemented by injections of neoarsphenamine. If there is no evidence of improvement with this treatment within a month, bronchoscopy should be tried and, if this also fails, surgery is indicated.

DR. HAROLD BRUNN, San Francisco: A study of cases of bronchiectasis at the University of California Hospital Thoracic Clinic substantiates in the main the thesis promulgated by Dr. Warner in his paper. There can be no doubt in reading the history of the cases that we have had, especially severe ones, that infection early in life is the distinguishing feature. However, I still feel that infection is not the only factor involved. There are certain cases of congenital bronchiectasis which I believe are present and brought to the attention of the physician only when infection supervenes. The only method by which this point can be evaluated is by a more careful roentgen study of children in early life, especially those whose deliveries have been difficult and in whom atelectasis occurs. However, at the present time roentgenograms of small children are very difficult to interpret and iodized oil studies are practically impossible. The rabbit as an animal for experimentation is a poor choice, as it is frequently subject to bronchiectasis. I am fully in accord with Dr. Warner as to the physiology involved in the formation of the sacculations in regard both to the atelectatic lung and to the dilating force of inspiration. Experimental work along these lines was carried out in our laboratory by Drs. Prinzmetal and Brill. Dr. Prinzmetal has since then continued this work at the Barnes Hospital, Washington University, a report of which appeared last year in the *Journal of Allergy*.

CLINICAL STUDY UNDER CONTROLLED CONDITIONS OF 1,083 CHILDREN WITH HOOKWORM

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A recent investigation [1] of the hookworm problem in Mississippi revealed that there had occurred a marked decrease in both incidence and intensity of hookworm infestation since 1914. No recent clinical studies of hookworm have been made to determine its effects on the health of school children under these conditions of lowered prevalence and intensity of infestation. Since methods are now available by which with a fair degree of accuracy the physical condition of the patient can be studied in relation to the hookworm burden, the present report deals with such a study among rural school children in George County, located in southeastern Mississippi.

This particular area was studied because it was known that 40.8 per cent of 1,618 white persons were found in that county to have hookworm during the recent state-wide study in Mississippi. Since it has been established that the highest incidence and intensity of infestation of hookworm is found in the school age group, from 5 to 18 years inclusive, and as the most severe symptoms of hookworm disease are found in

Drs. Miller and Harvey were students in the fourth-year medical class at the time this work was done.

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1. Keller, A. E.; Leathers, W. S., and Ricks, H. C.: An Investigation of the Incidence and Intensity of Infestation of Hookworm in Mississippi, Am. J. Hyg. **19**: 629-656 (May) 1934.

this group of the population, the present study concerning the clinical manifestations was confined to individuals of this age period.

The plan of study was projected so that there would be for each child studied a medical and dietary history and a complete physical and blood examination. The hemoglobin determinations were made by the Sahli method with hemoglobinometers standardized against a solution the hemoglobin content of which had been determined gasometrically. An examination of the blood by the thick drop method for malaria parasites was also included, to rule out a condition that might complicate or produce symptoms and signs similar to those of hookworm disease. Individuals in whom plasmodia were found in the blood and also those showing parasitic infestations other than hookworm were excluded from this series of cases. A specimen of feces was obtained from each individual and each specimen was examined by both the salt flotation and Stoll dilution egg-counting technics. A total of 1,083 school children were studied according to the plan outlined. This represents approximately 59 per cent of the children of school age in the county.

TABLE 1.—*Intensity of Hookworm Infestation* *

Intensity of Infestation: Eggs per Cc. of Feces	Approximate Number of Hookworms	Clinical Classification	Number of Specimens	Average Number of Hookworms	Per Cent Positive
Salt flotation and egg count negative.....	None	Negative	222	...	20.5
Salt flotation positive, egg count negative..	.....	Very light	226	...	20.9
0 to 699	0 to 24	Very light	189	15	17.5
700 to 1,299	25 to 50	Light	169	39	15.6
1,300 to 2,599	51 to 100	Light	90	77	8.3
2,600 to 12,599	101 to 500	Moderate	161	194	14.9
12,600 to 25,099	501 to 1,000	Heavy	13	657	1.2
25,100 and over	1,001 and over	Very heavy	13	1,710	1.2
Total.....			1,083		100.0

* One thousand and eighty-three specimens of feces examined by both the salt flotation and Stoll dilution egg-counting technic.

In order to obtain a control series, all children whose specimen of feces contained no hookworm eggs as determined by examination with both the salt flotation and egg-count methods were placed in one group. These children all lived in the same families and under similar environmental and dietary conditions as those who were found to have hookworm. Of the 1,083 specimens of feces examined 222, or 20.5 per cent, were negative by both the salt flotation method and the egg count. This group is considered as a control series.

Of the 1,083 specimens there were 861, or 79.5 per cent, positive on salt flotation and 635, or 58.6 per cent, positive on egg count. This difference of 19.9 per cent more specimens found positive by the salt flotation method than by egg count is accounted for by the greater efficiency of the salt flotation technic in detecting hookworm eggs in specimens of feces containing only a small number of ova. Practically all individuals who are found to have hookworm under these conditions have very light infestations.

The intensity of infestation of the specimens found positive on egg count is shown in table 1.

If an intensity of infestation of 2,600 or more eggs per cubic centimeter of feces, or 100 or more hookworms, is taken as the level at which clinical symptoms may be expected to be present, table 1 shows that only 187, or 17.3 per cent, of the specimens examined showed infestations which were probably the cause of symptoms. If the group of specimens designated "salt flotation positive, egg count negative" are considered as very light infestations, it is seen that 62.2 per cent of all the specimens showed very light or light infestations and 20.5 per cent were negative. In the tables that are to follow, the approximate number of hookworms will be shown rather than the number of eggs per cubic centimeter of feces. The group of cases that were positive on salt flotation but negative on egg count are also included with the very light group.

HISTORIES

The symptoms of hookworm as shown by the history records of 1,083 children have been analyzed according to the intensity of infestation. There were no significant differences found in the different intensity groups for such symptoms as anorexia, digestive disturbances, abdominal pain and discomfort, disturbed sleep and restlessness. Approximately as many children complained of these symptoms in the control group as in the groups showing variations in intensity of infestation. There was, however, a definite correlation between the intensity of infestation and such symptoms as fatigue, weakness, dyspnea and edema. This analysis is shown in table 2.

In analyzing table 2 it is found that in the negative or control series the percentage of persons complaining of fatigue, weakness, dyspnea and ground itch was lower than in any of the hookworm infested groups. There is rather marked variation in the light intensity groups and it is only when an infestation of 100 worms or more is reached that there is decided increase in the percentage of individuals complaining of these symptoms. Not only were there larger numbers of children with moderate and heavy infestations complaining of fatigue, weakness and dyspnea but it should be stated that the degree of fatigue, weakness, dyspnea and edema was more marked in these children with moderate and heavy infestations than in those of the lower intensity groups.

A history of ground itch has always been considered a cardinal symptom of hookworm disease and in this series of cases children giving a history of ground itch were studied with reference to the significance of this symptom. The data show that 34.5 per cent of the negative or control group and well over half of those with hookworm gave a history of ground itch. Moreover, conditions conforming to the clinical manifestations of ground itch were found not infrequently in children during the examination.

TABLE 2.—*The Correlation of Symptoms with Intensity of Hookworm Infestation*

Approximate Number of Hookworms	Number Examined	Fatigue		Weakness		Dyspnea		Edema		Ground Itch	
		Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent	Number	Per Cent
Negative	222	31	14.0	31	14.0	28	12.6	12	5.4	76	34.2
0 to 24	415	96	23.1	94	22.7	56	13.5	16	3.9	242	58.3
25 to 50	169	51	30.3	44	26.0	39	23.0	13	7.7	106	63.3
51 to 100	90	19	21.1	22	24.4	19	21.1	3	3.3	66	73.0
101 to 500	161	50	31.0	49	30.4	43	26.7	16	10.0	132	82.0
501 to 1,000	13	8	61.5	8	61.5	7	53.8	4	30.7	11	84.6
1,001 and over	13	9	69.2	8	61.5	7	53.8	2	15.3	8	61.5

PHYSICAL EXAMINATION

The results of the physical examinations are shown in table 3. In order to evaluate the effect which foci of infection may produce and obscure the conditions

produced by hookworm infestation, an analysis of those individuals in whom diseased teeth and tonsils were found on physical examination is included. Only those tonsils which the observer was reasonably sure were diseased are included in this analysis.

One of the most striking observations on physical examination was the large percentage of children in each group who were underweight. Only those children who were either 10 per cent above or 10 per cent below the weight for their heights were considered overweight or underweight as determined by the standards of the American Child Health Association. Table 3 shows that from 56.6 to 71.5 per cent of the children examined were underweight, from 24.5 to 37.8 per cent were normal weight, and from 0.7 to 5.7 per cent were overweight. It was found that for all intensity groups the average underweight was 17.7 per cent and there was a variation between the different groups of from 16.3 to 20.0 per cent. However, there was only a slight variation in the degree of underweight in the various intensity groups as compared with the control series.

The figures for weights show that in the moderate and heavy infestations there is some increase in the percentage of children who were underweight. Table 3 shows also that the percentage of children underweight is essentially the same in the negative group as in the groups showing light and moderate hookworm infestations. Obviously there were factors operating other than hookworm to bring about this condition in both the infested and the noninfested groups. Although it is not possible to compare the data concerning the heights of the children examined in this series with the heights of a comparable group of normal children, the impression was gained that for the study as a whole a majority were undersized generally.

The clinical observations of the skin and mucous membranes showed in general that the percentage of individuals with anemia increased with the intensity of hookworm infestation. Of the individuals who were in the negative or control group, 41.4 per cent were recorded as having clinically some degree of pallor of the skin and mucous membranes.

Physical examinations revealed that the percentage of children with poor nutritional status is slightly higher in the group with light hookworm infestation than in the control group, and it is definitely higher in the groups with moderate and heavy infestations.

The percentage of children with diseased teeth in the different groups showed no significant variation. From 42.9 to 61.5 per cent of the children in each group in this series had diseased teeth. Practically the same figures were obtained in regard to diseased tonsils. From 18 to 40 per cent of all the children in each group were recorded as having diseased tonsils. The percentage of children with diseased tonsils in the different intensity groups did not vary much and the number in the control group with this condition was about the same as in the groups showing hookworms. The data show that diseased teeth and tonsils were equally distributed throughout all groups examined and these conditions should be considered as probable factors influential in causing the malnutrition and anemia found.

TABLE 3.—*Correlation of Results of Physical Examination with Intensity of Hookworm Infestation*

Approximate Number of Hookworms	Examined	Normal Weight Number	Normal Weight Per Cent	Overweight Number	Overweight Per Cent	Underweight Number	Underweight Per Cent	Average per Cent Underweight	Poor Nutritional Condition Number	Poor Nutritional Condition Per Cent	Pallor of Skin and Mucous Membranes Number	Pallor of Skin and Mucous Membranes Per Cent	Diseased Teeth Number	Diseased Teeth Per Cent	Diseased Tonsils Number	Diseased Tonsils Per Cent
Negative	222	76	34.4	7	3.1	138	62.5	16.6	38	17.0	92	41.4	104	47.0	55	24.8
0 to 24	415	156	37.6	20	4.8	242	58.3	18.0	85	20.5	163	39.3	183	44.1	103	24.8
25 to 50	169	61	36.1	6	3.6	102	60.3	17.4	41	24.3	79	46.7	82	48.5	42	24.9
51 to 100	90	33	36.7	2	2.2	55	61.1	17.0	21	23.3	38	42.2	50	55.5	24	26.7
101 to 500	161	45	27.8	1	0.7	115	71.5	16.3	51	31.7	86	53.4	76	47.2	30	18.6
501 to 1,000	13	5	36.3	0	0.0	8	63.7	18.0	6	46.0	9	70.0	6	46.0	4	30.7
1,001 and over	13	3	24.5	0	0.0	9	71.5	20.0	7	52.0	11	84.6	8	61.5	5	40.0

BLOOD EXAMINATION

In making the blood counts the red and white cell pipets containing the diluted blood were placed in a mechanical device (rotor) in order to obtain more uniform dispersion of the cells in the diluting fluid. This method has been described by Bryan and Garrey.[2] The precautions regarding fresh diluting fluid for the red blood cell counts were observed as suggested in their paper. The method used for hemoglobin determination has already been described. In making the differential leukocyte counts, slide smears were stained with Wright's blood stain. Two hundred leukocytes in each specimen were counted.

The results of the examination of the blood are given in table 4, which has been arranged to show the average results in both the control group and the different intensity levels of those infested with hookworm.

A discussion of the data concerning the blood examination is based on the normal values of the constituents of the blood of children in corresponding age groups as are under consideration in this study. The average red blood cell count and hemoglobin estimation[3] for normal children 5 years of age is stated to be 4,500,000 red blood cells per cubic millimeter and 85 per cent hemoglobin, 100 per cent being used as equivalent to 16 Gm. For normal children 10 years of age the average is 5,000,000 red blood cells and 90 per cent hemoglobin. For both age periods 8,000 white blood cells per cubic millimeter is the normal average. If these figures for the hemoglobin should be translated into grams per hundred cubic centimeters to correspond with the method of determination used in this series of observations, the average normal of 5 years would be 13.6 Gm. and for 10 years would be 14.4 Gm. per hundred cubic centimeters of blood.

There was a secondary anemia in all groups with hookworms as well as in the control series. However, there was very little difference in the negative group as compared with those having light infestations. There was no appreciable decrease in the red blood cell counts and hemoglobin until an infestation of 100 hookworms or more is reached, in which groups there was a greater decrease in hemoglobin. Those children having the heaviest worm burdens were on the average more anemic than those having either no hookworm or light infestations.

2. Bryan, W. R., and Garrey, W. E.: A Mechanical Device That Produces Uniform Dispersion of Blood Cells in the Diluting Pipet, J. A. M. A. **103**: 1059-1060 (Oct. 6) 1934.

3. Holt, L. E., and Howland, John: Holt's Diseases of Infancy and Childhood, ed. 10, Revised by L. E. Holt Jr. and Rustin McIntosh, New York, D. Appleton & Co., 1935, p. 529.

In individual cases, anemias as severe as those found in the children with moderate and heavy hookworm infestations were also found in children having light infestations. In the control group, 18 per cent had anemias as severe as those found with moderate and heavy infestations. Therefore it is apparent that hookworm infestation alone does not account for the anemia, as the same degree of secondary anemia was found in a significant number in each of the groups.

TABLE 4.—*Results of Blood Examination* *

Approximate Number of Hookworms	Number Examined	Red Blood Cells, Millions per Cu. Mm.	Hemoglobin, Grams per 100 Cc.	White Blood Cells, Thousands per Cu. Mm.	Per Cent Eosinophils	Per Cent with Normal Number of Eosinophils
Negative	222	3.445	10.1	7.70	9.6	36.0
0 to 24	415	3.428	9.8	8.35	12.9	16.5
25 to 50	169	3.368	9.6	8.23	11.9	13.0
51 to 100	90	3.575	9.6	9.15	14.2	11.1
101 to 500	161	3.148	9.3	7.96	13.2	4.3
501 to 1,000	13	3.190	7.6	7.54	17.9	8.0
1,001 and over	13	2.857	6.5	8.32	13.8	15.0

* Average red and white blood cell counts, hemoglobin determination and eosinophil count according to intensity of hookworm infestation.

The average leukocyte count was found to be within the limits given by Holt and Howland [3] (1933). There was no relationship between the intensity of infestation and the leukocyte count. In each group there were a few counts above 10,000 cells per cubic millimeter, one of these being 18,700. There were only seventeen counts below 5,000, the lowest being 2,750.

The differential leukocyte counts revealed normal distribution of the cells except for the eosinophils. Table 4 shows that in the control group an average of 9.6 per cent of the white cells counted were eosinophils. Only 36 per cent of the counts in the negative group contained less than 5 per cent, which is considered the upper limit of normal. This abnormally high eosinophil count in a large number of individuals without intestinal parasites may be explained in part by the fact that this investigation was carried on during the season most favorable for the transmission of hookworm. Under these conditions it would be possible to find an increase in the eosinophil resulting from migration of hookworm larvae even though examination of the feces revealed no hookworm eggs. Similar instances have been reported in which this occurred during the period of migration following massive infection with hookworm larvae.[4]

In the infested groups no relationship between the worm burden and the percentage of eosinophils could be determined. In each group there was an increase in the eosinophils, the average varying from 11.9 to 17.9 per cent. In from 4.3 to 17 per cent of the blood specimens obtained from children known to have hookworm, the number of eosinophils was within normal limits. The smallest number of normal eosinophil counts was found in the group showing from 100 to 500 worms. These data indicate that, while in a majority of individuals with hookworm there is usually found an increase in the eosinophils, there also may be no increase in these cells.

DIETS

The data relative to the diets of the individuals studied in this series were obtained by questioning the parents and recording on special forms the information relative to the amounts of the usual types of food ordinarily consumed, such as milk, cereals, meat and eggs, fruits and vegetables. Information concerning the use of accessory foods, such as cod liver oil, orange and tomato juice, and yeast also was obtained. Notation was made as to whether none or very small amounts of these substances were eaten or whether moderate to large amounts were included in the usual diet. Data relative to dietary habits are difficult to obtain, but we believe that the dietary data obtained in this study is representative of the area under consideration.

Table 5 contains these data, which have been prepared so as to show the relative amounts of these substances usually consumed. The figure 1 under each heading indicates that either none or very small amounts of the particular food were eaten and the figure 2 represents either moderate or large amounts. Figure 1 represents inadequate amounts and figure 2 adequate amounts of the various foods. The figures in the columns represent the percentage of persons in each group. In order to conform to the procedure used in reporting the other observations, the dietary data will be given according to the various intensities of infestation.

Table 5 shows that on the whole the amounts of the different foods consumed by all groups were inadequate except vegetables. Inquiry as to the kind of vegetables eaten indicated that most of the vegetables consisted of dried beans and peas. Only small amounts of green leafy vegetables were eaten. It was also found that the term meat was used to indicate salted fat pork with a very small amount of lean pork in it. This was the usual type of meat used, though small amounts of eggs, beef, chicken and fish were eaten. The constituents of the diet also were on the whole lacking in animal protein and hematopoietic substances. It can be said that the diets were not only inadequate in amount but also very poorly balanced.

One of the striking features concerning the diet was the extremely small number of children who had

TABLE 5.—*Dietary Data Showing Relative Amounts of Different Foods Used in 1,083 School Children Examined for Hookworm According to Intensity of Infestation*

Approximate Number of Hookworms	Number Examined	Milk		Cereals		Meat and Eggs		Vegetables		Fruits		Additional Vitamins	
		1 %	2 %	1 %	2 %	1 %	2 %	1 %	2 %	1 %	2 %	1 %	2 %
Negative	222	33	67	40	60	38	62	10	90	32	68	98	2
0 to 24	415	44	56	47	53	37	63	13	87	45	55	99	1
25 to 50	169	40	60	54	46	44	56	10	90	54	46	100	0
51 to 100	90	45	55	58	42	49	51	14	86	65	35	100	0
101 to 500	161	52	48	80	20	49	51	13	87	68	32	99	1
501 to 1,000	13	71	29	93	7	50	50	7	93	72	28	100	0
1,000 and over	13	71	29	86	14	50	50	21	79	58	42	100	0

1 indicates that none or only small amounts of the food were eaten.
2 indicates that moderate to large amounts of the food were eaten.
% indicates percentage of persons in each group.

received additional food substances in the form of vitamins. From 98 to 100 per cent of all children had received none of these foods. It would seem reasonable to state that the lack of adequate amounts of food together with the poor balance of the diet and lack of additional vitamins was responsible in a great measure for the large percentage of children shown to be underweight and undersize. It is therefore reasonable to assume that the unsatisfactory dietary conditions may be considered an important accessory factor in causing the secondary anemia associated with hookworm infestation.

4. Ashford, B. K.; Payne, G. C., and Payne, Florence K.: Acute Uncinariasis from Massive Infestation and Its Complications, J. A. M. A. **101**: 843-847 (Sept. 9) 1933.

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935

Table 5 shows that with the increase in the intensity of infestation the diet became more inadequate in substance except vegetables (dried beans and peas). This was probably due to the economic condition in certain parts of the county under study, because the records show that those communities in which the highest incidence and the greatest number of heavy infestations were found were the poorest and had the largest number of families on the direct federal relief rolls. It should be stated, however, that the diet in those communities in which the economic conditions were better, while somewhat improved, were not satisfactory. It would appear that dietary insufficiencies were possibly almost or fully as important in bringing about the abnormal blood conditions noted as any other factors. Although hookworm infestation is conducive to increasing the anemia, it should be noted that the same dietary faults and the same degree of malnutrition were found in the groups without hookworm as in the groups with hookworm.

COMMENT

This study shows that there is a correlation between the physical condition of children infested with hookworm and the worm burden. This relationship is not striking, however, until the intensity of infestation reaches a level of moderate to heavy infestation (100 or more hookworms). In these intensity groups as compared with the negative or control group and those with light infestations there were more children complaining of symptoms such as fatigue, weakness, dyspnea and edema. The degree of these symptoms was also more marked in these children. They were also more anemic as compared with those who either had no hookworm or had light infestations.

Certain conditions were found to essentially the same extent in all groups, including the control series. The observations relative to secondary anemia, poor dietary conditions, malnutrition, underweight, diseased teeth and tonsils were especially striking. In the presence of these conditions the clinical manifestations produced by hookworm infestation are likely to be more marked than if complicating factors were not present. It seems likely, especially in the light and very light cases, that factors other than hookworm were in part at least responsible for bringing about the physical condition of the children examined.

It has been shown by workers in Puerto Rico [5] that where satisfactory diets containing iron can be provided the effects of hookworm infestation can be decreased without removing the hookworms. In considering the measures that are necessary to improve the physical conditions of children living under such conditions it is necessary to reduce the environmental hazards, such as improper excreta disposal, and to eradicate the hookworms present. The removal of foci of infection, with provision of satisfactory diets and the use of iron following treatment, especially in the heavy infestations, are necessary procedures if the normal health level of children in these areas is to be maintained.

SUMMARY

1. In a series of 1,083 children it was found as a result of the examination of a specimen of feces for hookworm eggs that 222, or 20.5 per cent, were negative and that 79.5 per cent were infested. Of those infested 674, or 62.2 per cent, had very light or light infestations and 187, or 17.3 per cent, had moderate and heavy worm burdens.

2. As regards the symptoms of which these children complained, no significant differences were noted in either group for such disturbances as dyspnea, weakness and fatigue, and edema until an infestation level of approximately 100 or more hookworms was reached. Not only did a larger percentage of children complain of these symptoms when the intensity of infestation reached this level but also the degree of dyspnea, weakness and fatigue, and edema was increased.

3. For all groups studied, from 56.6 to 71.5 per cent were underweight as determined by accepted standards. There was only slight variation in the degree of underweight in the infested groups as compared with the controls.

4. The data relative to anemia and malnutrition as determined by physical examination indicate no striking differences between the negative or control group and the very light and light infestations. Those individuals showing the heaviest worm burdens had the greatest degree of anemia and malnutrition. Anemia was noted, however, in 41.4 per cent of the 222 children in the control series.

5. Diseased tonsils and teeth were present to almost the same extent in both the control group and in each group with hookworm.

6. The red blood cell counts and hemoglobin determinations show a secondary anemia in all groups, the degree of anemia being greatest in those children with infestations of 100 or more hookworms. It was found that 18 per cent of the control series and from 22 to 27 per cent of those with very light and light infestations had the same degree of anemia as those with moderate and heavy worm burdens.

7. No significant deviations from the normal leukocyte counts were found.

8. An increase in number of eosinophils was found in all groups, the control group averaging 9.6 per cent. The average eosinophil count for those known to have hookworm varied from 11.9 to 17.9 per cent.

9. In the groups with hookworm, from 4.3 to 17 per cent had eosinophil counts less than 5 per cent. No relationship between the percentage of eosinophils and the number of hookworms could be determined.

10. Data relative to the dietary habits of the children studied showed that on the whole the diets were not only inadequate in amount but also poorly balanced and lacking in hematopoietic substances. The main components of the diet consisted of cereals, dried beans, peas and meat, which was salted fat pork. Only small amounts of animal protein, milk and eggs were consumed. Only a small number of children in the entire group received additional accessory food substances such as cod liver oil, orange or tomato juice.

CONCLUSIONS

The conclusions drawn from this study are based on conditions as they exist at the present time in George County, Mississippi. It is apparent that there is a high incidence of hookworm in the county studied, but a majority of infested children have very light or light worm burdens. It would seem that the other conditions such as anemia, malnutrition, probable foci of infection and poor diets should be given attention in any evaluation of the effects of hookworm infestation in the population studied, as these conditions were frequent in both control and infested groups.

5. Rhoads, C. P.; Castle, W. B.; Payne, G. C., and Lawson, H. A.: Observations on the Etiology and Treatment of Anemia Associated with Hookworm Infestation in Puerto Rico, Medicine **13**: 317-375 (Sept.) 1934.

In the early days of hookworm control in this country it was necessary to institute extensive treatment campaigns on account of the severity of the disease. It is reasonable to state that hookworm control now should be considered as part of a well balanced public health program. The removal of the hookworm alone will bring about only partial and temporary improvement in the health of children. Attention should not be focused on hookworm infestation alone to the exclusion of other conditions that may be as important as hookworm in producing ill health.

THE USE OF UNSATURATED FATTY ACIDS IN THE TREATMENT OF ECZEMA

(ATOPIC DERMATITIS, NEURODERMATITIS)

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About two years ago, Hansen [1] conceived the idea of investigating the possible clinical bearing of a discovery made in 1929 by Burr regarding the requirement for unsaturated fatty acids in animal nutrition. Burr found that rats placed on completely fat free diets, but adequate in all other respects, soon developed a definite syndrome characterized in the early stages by scaliness of the skin and in the later stages by cessation of growth, necrosis of the tail and pathologic alterations in the kidneys. When, however, he added fats to the diet of these experimental animals, they again began to grow and the skin scaliness disappeared entirely.

Hansen found that the iodine absorption value of the blood serum of eczematous babies is low and that it increases with clinical improvement. He could produce an increase in the serum iodine by feeding these babies linseed oil and he also reported a number of clinical cures by feeding linseed oil.

Cornbleet,[2] working independently, reported on the treatment of eczema (atopic eczema, neurodermatitis), in adults with maize oil. The essential substances of these unsaturated fatty acids are apparently linoleic, linolic and possibly arachodonic acids.

Utilizing the preliminary observations of these workers, a number of pharmaceutical houses are exploiting these unsaturated fatty acids to the medical profession with claims that are entirely unwarranted. These unsaturated fatty acids are now sold at an exorbitant price, with exaggerated claims for the treatment and cure of such conditions as eczema, alopecia, asthma and other allergic conditions.

In our clinical experience with linseed oil, covering a period of eight months, we have used a purified linseed oil as advised by Hansen, in doses of from one-half ounce to 1 ounce (15 to 30 cc.) three times a day. Our series comprises only eight patients with eczema (atopic dermatitis, neurodermatitis). These patients are the only ones of a larger number who carried out this treatment faithfully. Our results with these eight patients were universally poor. Two of these patients, while taking the linseed oil, developed crops of oily cysts and furunculosis. Another patient had a severe asthmatic attack after taking the linseed oil. The asthma developed the first day the oil was taken and skin tests with powdered linseed and cottonseed were strongly positive. No allergic tests were made on any of these patients and we did not include the patient who developed asthma in this series. One of the distributors of a linseed oil specifically states in its advertisement to doctors that asthma is benefited while under this treatment. In a previous article, one of us [3] cited the relatively large incidence of cottonseed as a cause of asthma, hyperesthetic rhinitis and associated allergic disturbances. Botanically related seeds such as linseed, kapok seed, peas and beans may also produce an allergic disturbance in a patient sensitive to cottonseed. Therefore the danger of promiscuously prescribing a linseed oil product for an eczema patient is apparent.

In none of these patients could we see any improvement in the clinical appearance of the eczema. In view of these results we have discontinued the use of the unsaturated fatty acids in the treatment of atopic eczema and we conclude that the promiscuous use of linseed oil as advocated by the distributors of this product is entirely unjustified and not without danger if used for a patient who may be cottonseed or linseed sensitive.

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1. Hansen, P. E.: Study of Iodine, Number of Serum Fatty Acids, in Infantile Eczema, Proc. Soc. Exper. Biol. & Med. **30**: 1198 (June) 1933.
2. Cornbleet, Theodore: Use of Maize Oil in the Treatment of Eczema, Arch. Dermat. & Syph. **31**: 224 (Feb.) 1935.
3. Taub, S. J.: Cottonseed Allergy, J. A. M. A. **103**: 334 (Aug. 4) 1934.

HERNIA REDUCED EN MASSE

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BOSTON

An unusual and dangerous complication of hernias is reduction *en masse*. This condition nearly always creates an emergency, since false reduction almost inevitably causes strangulation of the hernial contents. The gravity of such a situation makes it necessary to consider the possibility of hernia reduced *en masse* whenever certain characteristic clinical features are present.

This condition was recognized as early as 1702, when Saviard [1] first noted its occurrence. Conner and Howitt [2] in 1908 collected five instances in 1,618 cases of strangulated hernia at the St. Thomas and St. Bartholomew hospitals. Pearse [3] in 1931 published a statistical study based on 193 cases collected from the literature. Force and taxis appear to be the precipitating factors in 93 per cent of the cases. It occurs more commonly in males than in females, usually on the right side, and in inguinal rather than in femoral hernias. Pearse found only 12 per cent of the cases in femoral hernias.

The following case reports serve to illustrate the typical history and physical observations in patients with hernia reduced *en masse*. Three of the five cases occurred in a group of 632 hernias of all types, of which seventy-three were strangulated or incarcerated. It is noteworthy that in none of these cases was undue force or taxis a prominent feature in the history.

REPORT OF CASES

CASE 1.—D. F., a man, aged 50, entered the hospital complaining of generalized abdominal cramps beginning suddenly

From the Surgical Service of the Beth Israel Hospital.
1. Saviard: Observations de chirurgie, Paris, 1702.
2. Conner, E. M., and Howitt, A. B.: Ann. Surg. **47**: 573, 1908.
3. Pearse, H. E., Jr.: Surg., Gynec. & Obst. **53**: 822 (Dec.) 1931.

six hours before entrance. The pain gradually shifted to the right lower quadrant of the abdomen and was followed by nausea and vomiting. At the onset he noticed a tender bulge in the right inguinal region, but this soon disappeared spontaneously. Seven years previously he had had a bilateral inguinal herniorrhaphy and appendectomy.

Examination revealed a distended abdomen with waves of peristalsis traveling from left to right. There was no evidence of a recurrence of either inguinal hernia. However, over the right saphenous opening there was a distinct defect, which allowed the admission of the examining finger to a depth of about 1½ inches. Only a feeble impulse could be felt on coughing, but no distinct mass was palpable.

Under spinal anesthesia a right lower rectus incision was made. Dilated bowel presented. This bowel led to a right femoral hernia, the sac and unreduced contents of which protruded into the abdominal cavity. The neck of the sac was incised, and an incarcerated loop of ileum dark and discolored was liberated. The circulation of the loop returned satisfactorily. The sac was inverted into the abdominal cavity and removed after ligation of the neck. The convalescence was uneventful and the patient was discharged on the fourteenth postoperative day.

CASE 2.—B. S., a man, aged 48, entered the hospital complaining of abdominal pain and vomiting of two days' duration. He had had bilateral inguinal hernias for the past fifteen years, which had always been reducible. Six days before admission he developed cramplike pain in the left lower quadrant of the abdomen and in the region of the hernia, which had become incarcerated. He reduced the hernia and the symptoms subsided but recurred two days before admission. He began to vomit with increasing frequency and severity. He became obstipated, and enemas produced neither feces nor flatus. The right hernia was always reducible. The left hernia had not reappeared since the previous "reduction" six days previously.

The patient was dehydrated, and the abdomen was markedly distended and tympanitic. On the right side there was a reducible, nontender inguinal hernia, but on the left side the examining finger could be inserted through the external inguinal ring into a definite defect. No hernial mass could be palpated. The temperature by rectum was 100.4 F., the pulse rate 130.

Under spinal anesthesia, a left lower paramedian incision was made. The small bowel was found markedly dilated. This was traced down to the left internal inguinal ring, where a distinct bulge into the peritoneal cavity was noted. This consisted of a hernial sac with incarcerated and strangulated small bowel, the whole entirely out of the inguinal canal and occupying a retroperitoneal position. The neck of the sac was incised and the bowel liberated. It was deeply discolored but appeared viable. The sac was dealt with by inverting it and amputating it after transfixion at the neck. The immediate convalescence was stormy, the patient developing evidences of paralytic ileus. This was successfully treated, and the convalescence proceeded uneventfully.

CASE 3.—J. F., a man, aged 65, entered with a history of having had bilateral inguinal hernias for ten years. Three days before admission the left hernia protruded to the size of a large plum. He experienced some difficulty with it and therefore resorted to a warm bath, in which it apparently became reduced. Two hours later he began to experience generalized abdominal cramps, with nausea, and three hours after the "reduction" he vomited. The vomiting and the cramps continued to the time of entry.

The abdomen was markedly distended, and waves of peristalsis could be seen traveling over the upper half. The right inguinal region contained an easily reducible hernia. In the left inguinal region the external ring was dilated and easily admitted the examining finger. There appeared to be a definite defect in the floor of the canal, with only a weak impulse on coughing. The temperature was 100 F. rectally, and the pulse rate 120.

Under general anesthesia, a left rectus incision was made. The small bowel was definitely distended, the distended portion being traced down to the left internal inguinal ring. This ring appeared displaced directly into the abdominal cavity by a large sac containing small bowel. The bowel could not be liberated by gentle traction. Therefore the ring was incised at its upper aspect, and about 9 inches of dusky, cyanotic ileum delivered. Its surface was almost completely covered by ecchymotic hemorrhages. There were definite constriction rings present at both efferent and afferent loops. After ten minutes, the circulation appeared to have returned satisfactorily. A Witzel type of enterostomy was performed, the catheter emerging through a stab wound.

Shortly after operation the patient manifested a moderate degree of shock. This was successfully combated with intravenous infusion of saline and dextrose solutions. However, the blood pressure again dropped and the temperature rose to a terminal height of 106.8 F. The patient lapsed into coma and died twenty-four hours after operation.

His death appeared to be due to gangrene of a supposedly viable loop of ilium, or to a gas bacillus infection.

CASE 4.—E. W., a man, aged 59, was referred to Dr. C. G. Mixter complaining of vomiting of five days' duration. Since the onset of the vomiting, his abdomen became distended and he had no bowel movement. For the past seven years he had been aware of a moderate sized right inguinal hernia. Three days before the onset of the vomiting, the hernia became incarcerated. However, it was reduced without undue difficulty and there had been no pain in this region since.

The abdomen was markedly distended and tympanitic throughout. The right external inguinal ring was dilated, and a definite defect could be felt in the floor of the canal. When the patient coughed a slight impulse was felt, and a vague mass appeared to descend and strike the tip of the examining finger. The pulse rate was 90. The temperature was 98.4 F. rectally.

Several enemas were given with no results. Therefore, under ether anesthesia the abdomen was opened through a 6 inch right paramedian incision. The loops of small intestine were greatly distended and injected. Exploration of the right internal inguinal ring revealed a tumor mass the size of an orange. The tumor was composed of a hernial sac with a neck three-fourths inch in diameter and containing bowel, the whole having been reduced *en bloc*. The neck of the sac was incised, permitting reduction of the strangulated loop. The bowel was cyanotic and showed two pressure rings. It was viable, however. The usual herniorrhaphy incision was then made, and a routine herniorrhaphy was then carried out.

The convalescence was rather stormy and marked by persistent distention with some vomiting. On the fifth postoperative day the patient died suddenly from what was thought to be a massive pulmonary embolus.

CASE 5.—B. M. L., a physician, aged 44, was referred to Dr. C. G. Mixter complaining of generalized abdominal cramps and nausea of forty-eight hours' duration. He had had bilateral inguinal hernia for many years. Eighteen years previously bilateral herniorrhaphy was performed, with recurrence on the right side. During the past four years he had worn a tight fitting truss. The hernia had become scrotal shortly after its recurrence but had always been reducible. Forty-eight hours before admission to the hospital, the hernia slipped down. He reduced it without any undue force, and thereafter the truss was able to retain it. Shortly afterward, he began to feel nauseated and vomited. The nausea and the vomiting persisted, and the abdomen became distended. He began to experience cramplike pain about the umbilicus.

The abdomen was distended and tender over the lower half. The right inguinal region showed a distinct defect, with a slight impulse transmitted on coughing. Just above the usual site of the internal inguinal ring was a deep tender mass.

Operation through a herniorrhaphy incision revealed a large hernial sac displaced upward in a properitoneal position and containing a loop of gangrenous small bowel. The intestine was resected and the hernia repaired. The convalescence was uneventful, except for a transient attack of biliary colic.

COMMENT

A hernia reduced *en masse* consists in a displacement of the sac and its contents into an anomalous position. Despite the apparent reduction, the relation of the sac to its contents remains undisturbed. The common posi-

tion that the sac assumes is the space between the peritoneal and the muscle layers of the abdominal wall ordinarily defined as the properitoneal space. Certain conditions must obtain before such a situation can occur. The neck of the sac must be sufficiently wide to allow the entrance of bowel or omentum and yet narrow enough to imprison and retain incarcerated contents. The sac itself must be sufficiently mobile within the hernial canal to permit it to be forced upward and inward. Likewise sufficient mobility of the neck of the sac, together with the parietal peritoneum immediately surrounding the hernial ring, is necessary to provide room behind the peritoneum for the "reduced" hernia. The structures surrounding the neck of the sac must be fairly well separated from the internal ring. The degree of mobility of the neck of the sac determines to a large extent the position which the falsely reduced mass will occupy. The neck may be fixed, but the peritoneum just within the peritoneal cavity and anterior to the ring may be so lax as to form a properitoneal pouch. Under such circumstances the "reduced" mass will occupy a properitoneal position and may then be palpable as a tumor in the abdominal wall. Similar laxity posterior to the ring may act to produce a retroperitoneal displacement of the sac. If considerable pressure and taxis are applied, rupture of the sac may occur and the incarcerated contents may come to lie extraperitoneally. Commonly the neck of the sac moves directly inward with the reduced sac and is therefore found projecting into the abdominal cavity. If omentum is adherent to the sac, the entire sac may be pulled inward when the patient lies down, since the omentum in sliding back tends to invert the sac.

Obviously, only a fairly large well developed hernia could provide these conditions. The wide indefinite ring of the direct inguinal type of hernia should not provide suitable circumstances for reduction *en masse*. Nevertheless this has been observed. The hernia whose contents have become permanently incarcerated is unlikely to be reduced *en masse*. In this case the sac is usually too firmly adherent. However, even here the possibility is not too remote. It is the moderate sized well established, freely movable hernia lying in a canal whose walls are lax and distensible that is the most common type in which this accident occurs.

In the femoral hernia, reduction *en masse* is extremely rare, since the slitlike opening of the saphenous space with its firm fascia and sharp semilunar upper edge prevents the pushing of the sac and its contents inward beyond it. It is for the same reason that incarceration in femoral hernias is common. Despite this peculiar anatomic arrangement, actual reduction *en masse* with strangulation of bowel has been observed (case 1).

When reduction *en masse* occurs, it is usually possible to elicit the following story: The patient has invariably been aware of a hernia which had previously been reducible and on this occasion the hernia had apparently been reduced. Yet the pain, cramps and vomiting had continued or had appeared for the first time. The reduction need not necessarily have been accomplished with any undue force, although the false reduction usually does occur as a result of an overstrenuous attempt at reduction by pressure or taxis, either by the patient, by his friends or even by his physician. An ill fitting truss may provide the means for bringing about this accident. In a small percentage of cases the reduction occurs spontaneously and may take place several days or even weeks before the symptoms of intestinal obstruction have supervened.

On examination there may be noted the objective evidence of intestinal obstruction. Superficially the local examination may reveal nothing remarkable, but with careful palpation of the hernial canal through the ring there is to be detected a definite defect with only a feeble impulse on coughing. This finding is characteristic, and when it exists in any individual giving a history of a previous hernia a reduction *en masse* should be considered. In a properitoneal reduction, a mass may be felt in the abdominal wall above or medial to the usual site of the "reduced" hernia. Rectal examination usually fails to disclose anything of significance.

The treatment is immediate operation. The abdominal approach to the hernia is recommended as the most advisable, since it is always necessary to incise the neck of the sac in order to liberate the bowel or omentum. The approach provides the most direct method of reaching and dealing with the various hernial orifices. In the event that resection of bowel is necessary, the advantages of doing so through a laparotomy incision are obvious. A lower rectus incision retracting the muscle medially should be the incision of choice. The inguinal, femoral and umbilical rings should be palpated first, and no attempt to pull forcibly the bowel or omentum out of the sac should be made. Time will be saved and trauma avoided if the neck of the sac is immediately cut and the contents are gently reduced back into the abdominal cavity. When the sac has been emptied and appropriate disposition made of its contents, it can be dealt with by inverting it into the abdominal cavity, and then amputating it after transfixion at the neck. If the patient's condition is good, it may be advisable to repair the hernial canal through a separate incision. This procedure can be carried out with dispatch if the sac has been eliminated from within through the abdominal incision.

SUMMARY

Five cases of hernia reduced *en masse* were seen. Although this is considered a rare accident, three of the five cases occurred in a group of seventy-three incarcerated or strangulated hernias. It is shown to occur in the well established hernia with the sac lying loosely in the hernial canal. The hernial sac and its contents can be displaced properitoneally, retroperitoneally, or directly into the abdominal cavity. Forceful attempts at reduction may or may not be a factor in its production.

Patients are seen because of intestinal obstruction, and examination reveals a definite defect at the usual site of the hernia, with no apparent hernial sac. In the properitoneal false reduction a tumor mass may be felt in the abdominal wall above and medial to the site of the internal inguinal ring. The abdominal approach to the hernia is recommended as the most expedient.

330 Brookline Avenue.

Born Calcium Poor.—To be normal and healthy the full-grown human body must be richer in calcium than in any other mineral element; yet every human being is born calcium-poor. . . . Why are we born calcium-poor? . . . It is a handicap which nature accepts (or imposes) in order to diminish the casualties of delivery. Once the danger of the event of birth is safely past, it is presumably to the advantage of the young organism to recover from the handicap of its low-calcium condition of body as rapidly as possible. Hence the extreme importance of liberal calcium intake for the growing child.—Sherman, H. C.: Food and Health, New York, Macmillan Company, 1934.

Clinical Notes, Suggestions and New Instruments

CAYO POWER INSTRUMENTS

E. P. CAYO, M.D., SAN ANTONIO, TEXAS

These instruments are intended to cover the entire field of bone surgery and to do it in such a manner that, from the standpoint of antisepsis, they need cause no more anxiety than would ordinary hand instruments.

There is a set of these instruments, consisting of two cross cut saws (or reciprocators), an automatic chisel and a drill, or rotator; also several attachments and many tips, such as saw blades, drills and chisel blades. These instruments are

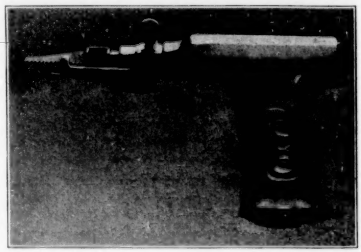

Fig. 1.—Reciprocator (saw gun) equipped for amputations or bone splicing.

driven through a flexible shaft and by means of a Universal Motor permanently housed in a carrying case.

With these instruments any kind of sawing imaginable can be done, and done without danger, because the hand can be closed on the teeth of the saw when it is going at full speed and yet with no danger to the hand. That is why ribs may be severed without injuring the pleura, or bone flaps made in the

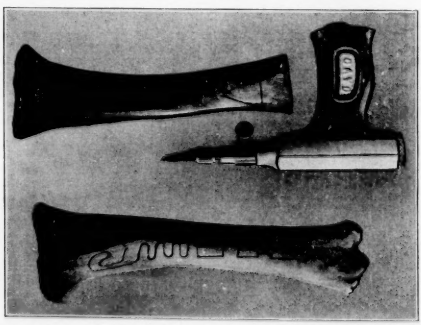

Fig. 2.—Reciprocator equipped for stab sawing; that is, for starting to saw directly into the bone for the making of bone grafts, curved or otherwise, laminectomies, and so on.

skull without injuring the dura. Bone grafts may be cut, curved or otherwise. Laminectomies can be done with ease in a very short time. The instruments are particularly adapted for amputations and bone steppings. Saw blades, varying from slender keyhole saws to the stout bevel pointed stab saw, come with the instruments.

Stab sawing is a method of sawing that enables one to cut right down squarely into the bone to make grafts curved or otherwise, to do laminectomies, and to remove odd-shaped pieces of bone, and the like. To do it well, however, requires considerable practice.

The automatic chisel consists of an attachment that converts the reciprocator into an automatic chisel. The attachment takes gouge and chisel blades of varied size and shape. With this instrument very delicate or very rapid work can be done.

The rotator (drill gun) is devised to operate any kind of bone cutting instrument requiring a rotary motion, such as drills, burrs, trephines and circular saws. It is built on the order of the reciprocator and is often referred to as a drill gun. Probably its most interesting feature is a gage that not

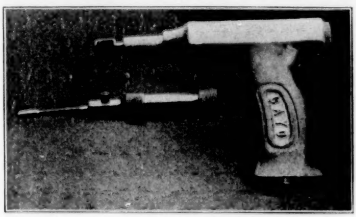

Fig. 3.—Reciprocator with chisel attachment.

only controls depth of perforation but also fixes the drill point to the exact location on the bone where perforation is desired.

The flexible shaft, although very small and flexible, will stall the powerful motor without breaking. It can be instantly connected to or disconnected from any of its instruments.

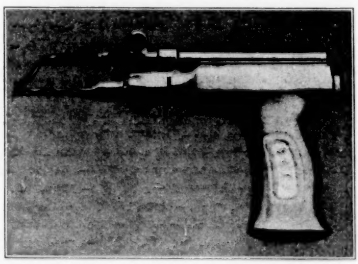

Fig. 4.—Rotator (drill gun) equipped with drill gage.

These instruments are built of chromium-plated bronze and stainless steel. They can be repeatedly sterilized without injury. They come in a carrying case 8 by 8 by 16 inches. The weight all told is about 25 pounds.

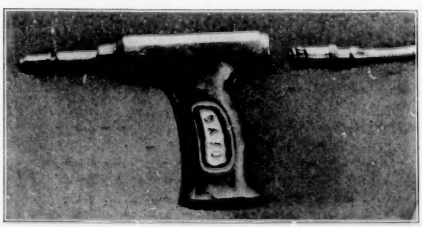

Fig. 5.—Instantaneous shaft connection.

It is sincerely hoped that these inventions and adaptation by their simplicity and versatility, their freedom from physical danger to both patient and operator, and last, but not least, their freedom from danger of field contamination will make the use of power instruments in bone surgery as popular as they should be.

Santa Rosa Hospital.

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Therapeutics

THE THERAPEUTICS OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The articles will be continued from time to time in these columns. When completed, the series will be published in book form.*—ED.

THE THERAPY OF JAW FRACTURES AND OF FACE INJURIES

OUTLINE BY DR. J. E. SCHAEFFER AND DR. M. B. SKINNER

Fractures of the jaw are either traumatic or pathologic. External blows, gunshot wounds, automobile accidents, falls, and extraction of teeth are the most common traumatic causes. The most common pathologic conditions that predispose to fracture are carcinoma, sarcoma, cysts, osteomyelitis, tuberculosis and syphilis. Pathologic fractures are relatively rare.

DIAGNOSIS

As fractures of the jaw are many times overlooked and loss of function or deformity often results from failure to recognize them, a thorough examination of the jaws should be made and roentgenograms taken whenever a patient presents himself with a history of trauma and pain or swelling about the face.

One should look for:

1. Local trauma.
2. Abnormal mobility.
3. Partial or complete loss of function.
4. Crepitus.
5. Deformity.
6. Loss of occlusion in some part of the arch.
7. X-ray evidence.

A fracture of the maxilla is more difficult to diagnose than that of the mandible. It may not be possible to obtain roentgenograms showing clear detail.

Differentiation Between a Fracture and Dislocation.—In a dislocation the patient is unable to close the jaws and cannot bring any of the teeth into occlusion. In a fracture some of the teeth may be in occlusion or can be brought into occlusion by manipulation of the fragments.

TREATMENT

General Principles.—In most cases the earlier the reduction is made the better, for the sooner the fragments are brought into position and immobilized the sooner the repair can begin. If, however, the patient is so severely injured that his life is in danger, it is better to delay treatment of the jaw until he is on the way to recovery, even as long as three or four weeks. If there is a marked swelling of the floor of the mouth or if the tissues on the lingual surface or tongue are badly injured, immediate fixation may embarrass respiration or favor infection.

After the jaws have been fixed, the patient should be instructed to cleanse his mouth thoroughly after each feeding. This is best accomplished by the use of a "baby sized" tooth brush and a dentifrice followed by rinsing the mouth with some good antiseptic; e. g., the Antiseptic Solution of the National Formulary. The patient has to subsist, of course, on a liquid diet. It is never necessary to extract a tooth in order that the patient may take nourishment. Even when there is a full complement of teeth there is enough space between the teeth to draw liquid through.

As practically all fractures of the jaw, when teeth are present, are compound, they are susceptible to infection. Some advocate establishing immediate drainage of all fractures by an incision just below the fracture line. A more conservative plan is to take care of the infection when it develops. When it does occur, fomentations are applied; and, when localization takes place, an incision is made to the bone and drainage instituted.

The Barton bandage, commonly applied either as a temporary or as a permanent means of treating a jaw fracture, is inefficient when there is any displacement. In most cases it tends to produce more displacement and causes more discomfort than no treatment.

Reduction and retention require recognition of the following special types of injury:

Fracture of the arch.
Complete transverse fracture of the maxilla.
Fracture of the arch in the edentulous.
Fracture back of the last molar tooth.
Fracture through the neck of the condyle.
Extensive fracture of the maxilla.
Lacerations about the face and mouth.

FRACTURE OF ARCH

When there are a considerable number of teeth present in both arches, the reduction and fixation of a fracture is greatly simplified, as the opposing arch may be utilized to fix the jaw in its proper relation by the use of intermaxillary wires. The methods commonly used are (*a*) the first Gilmer, (*b*) the second Gilmer, (*c*) the loop method and (*d*) the Hammond splint.

(*a*) In the first Gilmer method (fig. 1) a No. 24 gage brass wire, which is very pliable and does not stretch, is used. The wire is cut into lengths of about 15 cm. each, the ends being cut on a slant, which makes it easier to pass them through the interproximal spaces. The wire is then passed, from the lingual surface, through the interproximal spaces on each side of the tooth to be utilized for fixation. With a blunt instrument the loop of the wire on the lingual surface is held well down on the neck of the tooth and the two ends are grasped with a large needle holder and the wire is twisted tightly about the tooth. It is important that the wire should be down on the neck of the tooth to prevent it from slipping. A sufficient number of teeth are wired on either side of the line of fracture, and the corresponding teeth of the opposing jaw are wired in the same way. The mandible is then fixed to the upper jaw by twisting the wires of one to those of the other. By crisscrossing the upper and lower wires, a more stable fixation may be obtained.

There is one disadvantage in this method: In order to open the mouth the wires have to be cut, and if union has not taken place it is then necessary to rewire the jaws.

(*b*) In the second Gilmer method (fig. 2) a heavy arch wire, 14 gage, is adapted to the buccal and labial surfaces of the teeth of both arches. These are attached by threading a No. 24 gage brass wire between and around the teeth. Care should be taken that the wire is well down on the neck of the teeth and that a suffi-

cient number of teeth are wired to hold the arch wire rigid. Intermaxillary wires are then placed around the arch wires and the jaws are brought into occlusion by twisting them up tightly. This method is advantageous in that the mouth may be opened and inspected at any time and fixation again be established by merely replacing the intermaxillary wires. It is a much more stable method, which makes it very useful in cases of delayed union.

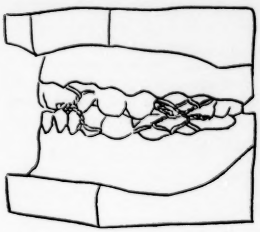

Fig. 1.—First Gilmer method.

Another adaptation of the Gilmer arch bar is very useful in handling fractures difficult to reduce, such as those in which there has been a delay in treatment. A modification of the arch bar is made by either bending a series of loops or soldering a series of lugs to both the upper and lower arch bars (figs. 3 and 4). These lugs are directed away from the occlusal line of the teeth. Elastic bands are then placed over the lugs and distributed in such a manner as to bring traction in the right direction for the reduction of the displaced fragments. The constant and even pull soon brings the fragments into their proper alinement with little or no discomfort to the patient.

(*c*) The loop method (fig. 5) is one in which a strand of No. 24 gage wire is twisted in the middle to form a loop large enough for another wire of the same size to pass through. The ends of this wire are then passed between the two teeth to be ligated from the buccal to the lingual side. One wire is brought around and passed through the interproximal space on the distal side of one tooth; the other is passed through on the mesial side of the adjacent tooth. One strand is passed through the eyelet and the two ends are then twisted, the wires being pulled tightly against the teeth. The same teeth in the opposing arch are wired in a like manner. The number of teeth wired depends on the kind and location of the fracture. Intermaxillary wires are now passed through the eyelets and the teeth brought into occlusion and the wires twisted tight.

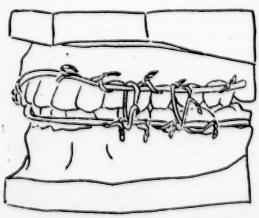

Fig. 2.—Second Gilmer method.

This method is not as stable as the second Gilmer method nor does it meet the variety of uses. Its one advantage is that it is easily and quickly applied and the jaws may be opened and inspected and fixation again obtained by merely placing on new intermaxillary wires.

Bringing the teeth into occlusion is not always as simple as just merely tightening the intermaxillary wires. In many cases some manipulation is necessary. This is strictly a mechanical problem and depends on the amount of displacement and the direction of the line of fracture. The amount of displacement will depend on the direction, application and degree of force producing the fracture plus muscular pull. In a general way one might say that the short fragment is displaced upward and the long fragment has a tendency to be displaced in a downward direction.

(*d*) The Hammond splint (fig. 6) furnishes another satisfactory method of handling single fracture of the mandible when there are sound teeth in both fragments. This splint consists of two arch wires, No. 14 gage, one shaped to the teeth on the buccal surface and the other on the lingual surface. These are wired together with No. 24 gage brass wires by passing them through the interproximal spaces and around the teeth. The small wires are passed over one arch wire and under the other and then twisted tight. This method allows the patient full movement of his jaw and saves him the inconvenience of having his jaws immobilized for several weeks.

COMPLETE TRANSVERSE FRACTURE OF MAXILLA

A complete transverse fracture of the maxilla requires fixation outside the mouth. The jaws are wired together by the second Gilmer method. A skull cap of plaster or the crown part of a woman's felt hat is adjusted to the head and both jaws are then immobilized by a piece of rubber dam with a slight tension on it, encircling the mandible and attached to the skull cap. When there is considerable displacement of the maxilla it is often necessary to reduce it by rubber band traction

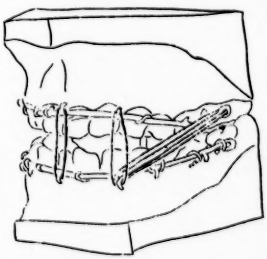

Fig. 3.—Adaptation of second Gilmer method for delayed reduction.

If this is the case, it is sometimes unavoidable to delay the fixation of both jaws until the teeth are brought into proper occlusion, as these may act as a wedge and prevent the traction from bringing the jaws into proper relation. Immobilizing the mandible to the maxilla is not always possible, as the fracture through the nasal fossae may obstruct breathing. In these cases the maxillae and facial bones are supported by a Kingsley splint (fig. 7). This is constructed to cover the upper teeth with metal arms extending outside the mouth and backward in line with the occlusal plane (fig. 7 *A*). This permits using the top of the skull as a fulcrum in order to seat the fractured bones somewhere near their normal relationship. After the maxillary bones have been seated, pressure is applied to the mandible externally in order to establish normal occlusion (fig. 7 *B*).

FRACTURES OF THE ARCH IN THE EDENTULOUS

With slight displacement, not great enough to cause nonunion or deformity, the only treatment necessary is to advise a soft diet and rest. These cases as a rule get along well and, when union has taken place, any change in the relationship of the two arches may be corrected by the proper construction of artificial den-

tures. If the displacement is extensive, it may be reduced by direct or circumferential wiring.

In the direct wiring method an incision is made along the lower border of the mandible. The line of fracture is exposed and all soft tissue removed from between the ends of the bone. Two holes are drilled in each fragment, one above and one below the mandibular canal. Two silver wires, 20 and 22 gage, are placed through the holes as follows: The first wire is inserted through the upper opening in the short fragment to the lower hole in the long fragment and then the other wire is placed in the other holes. The fragments are adjusted and the wires tightened to hold the fragments in their proper position. Care should be taken that the ends of the wires do not stick out into the soft tissue to cause undue irritation. The wound is sutured and the patient should be kept under close observation the first week to detect onset of infection promptly. If no infection occurs, the wires are left in permanently. If, on the other hand, infection occurs, it may be necessary to remove the wires for complete healing to take place; but this should not be done early, as it is possible for union to occur in the presence of a low grade infection.

When the circumferential wiring method is used, an incision is made as before and two wires are passed up into the mouth close to the bone on the buccal and lingual surface, one wire on each side of the line of fracture. The ends of the wires are passed through holes in a lead or vulcanite plate, which has previously been fitted to the ridge, and tightened up. The wound is then sutured. This method is not as stable as the direct wiring but it saves the necessity of drilling into the bone and thus lessens the danger of infection.

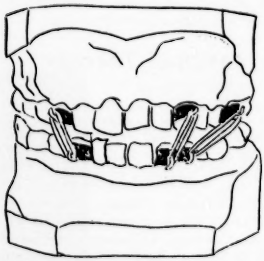

Fig. 4.—Angle bands with hooks and rubber bands for delayed reduction.

Fractures in which there has been a considerable loss of bone may require some type of dental splint. As each case is an individual problem and the construction of the splint requires the technical skill of a dentist, a detailed discussion is not advisable here. It is necessary to treat many of these by means of a bone graft.

FRACTURE BACK OF LAST MOLAR TOOTH

Fracture of the jaw back of the last molar tooth is very difficult to handle. If the fracture line is in a downward and backward direction there will be an upward and lateral displacement of the short fragment caused by the action of the temporal, masseter and internal pterygoid muscles. When this occurs there is a marked deformity of the jaw with a loss of the normal angle of the mandible. Many methods have been devised to treat this type of fracture, but none have proved entirely satisfactory. One method was to place a modeling compound or gutta percha mold in this area and then wire the jaws together. This, however, makes it very difficult to keep the mouth clean in this area and tends to infection. It generally causes a pressure necrosis of the soft tissue. Another method is to make a splint with a pin fixed in the ramus and force the posterior fragment into position by means of a jackscrew. Similar to this is the use of a head cast with a rod extending downward to the back of the neck. The angle of the jaw is exposed, a hole drilled through the bone, and a wire passed through and fastened to the rod of the plaster cast.

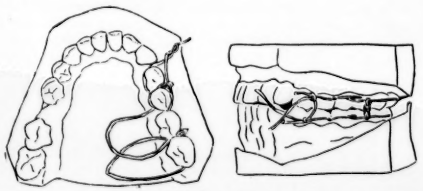

Fig. 5.—Loop method.

A method which was introduced by the Oral Surgery Department at the Cook County Hospital, and one which seems most satisfactory, is as follows: Arch wires are made as in the second Gilmer method, except that a prolongation of the unannealed wire is extended back past the line of fracture. The end of this extension wire is forked to fit over the bone on the short fragment. It is then bent in such a way that, when the jaws are brought into occlusion and fixed, the short fragment will be held down in position. In the last two years about forty cases have been treated this way with good results. None have shown any injury to the bone where the wire has rested against it. It is relatively simple to apply and the risk of infection caused by drilling into the bone is eliminated.

FRACTURE THROUGH NECK OF CONDYLE

In fracture through the neck of the condyle the general surgeon usually suggests an open reduction or the removal of the condyle. Both of these are contraindicated because of the danger of such an operation. The facial nerve lies just external to this region and unless the greatest care and skill are used it is apt to be injured, thus causing paralysis to that side of the face. Another great danger in this type of operation is the fact that the internal maxillary artery lies below the neck of the condyle, and if it is severed or injured it is difficult to control the hemorrhage. Wiring the teeth into occlusion usually establishes a satisfactory relationship of the long and short fragments. Fractures treated this way have united with satisfactory function; ankylosis of the temporomandibular joint has not occurred.

Fig. 6.—Hammond splint modified.

EXTENSIVE FRACTURE OF MAXILLA

Extensive fractures of the maxilla, involving the other facial bones, fall chiefly into two classes according to the character of the predominant displacement. "If a severe force, such as a kick of a horse, is applied from in front in an upward and backward direction,

the maxilla may be driven in toward the base of the cranium with considerable comminution and impaction; or if, as is most commonly the case, the force is applied to the prominence of the cheek, the malar bone will be more or less driven into the maxillary antrum; but at the same time there may be extensive radiating fractures. If one of these is a transverse fracture through the orbits, the whole bony framework of the face may sag down, supported only by the soft tissue" (Blair).

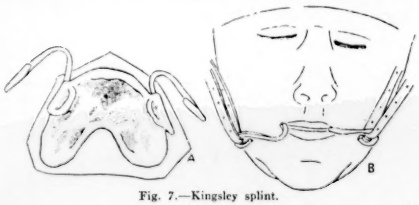

Fig. 7.—Kingsley splint.

The general principles of treatment of such injuries are as follows: If depressed fractures of the maxilla or nasal bones are present, these must be elevated back into position; lacerations of the soft tissue are cleaned and sutured so as to have the injured tissue brought back as near as possible to the normal position. All scars are allowed to heal for at least six months, as an ugly scar tends to become less unsightly. If after six months one believes that the scar can be improved, it is carefully resected for cosmetic appearance.

Fractures of the malar bone, when this bone is driven into the maxillary sinus, show a marked depression on the injured side of the face. Often the patient will complain of difficulty in closing his jaws, as the coronoid process of the mandible is impinged on by the depression of the zygomatic arch. These cases are treated by making an incision in the buccal sulcus and exposing the fractured maxilla. The malar bone is then elevated into position through the maxillary sinus and held in place by packing the sinus with gauze.

LACERATIONS

Lacerations about the face and the mouth frequently accompany fractures of the jaw. When the laceration extends from the external surface through to the mouth, treatment should be as follows: The wound is thoroughly cleansed with green soap and water, then irrigated with sterile water, and the surrounding tissue swabbed with alcohol. The mucous membrane is sutured from the inside of the mouth with black silk, so that the stitches may later be easily removed. Lacerations in the oral cavity heal more quickly if the raw surfaces are loosely approximated than if left to heal by themselves. The deep tissues are then sutured with 0000 catgut. Then the skin surfaces are brought together with horsehair.

When the laceration extends through the lip it is important that the vermilion borders be sutured together in a straight line; otherwise an ugly scar will result.

In cases in which there has been considerable loss of tissue, it is best to bring the tissues as near to their normal relation as possible, with the idea of a plastic correction later, though at times a plastic operation may with advantage be undertaken immediately, as was done in a patient who had three fourths of his upper lip and the floor of his nose bitten off. Both alae of the nose were pulled laterally, which caused much deformity. In this case a piece of the mucous membrane of the mouth was brought up and sutured in to form the part of the missing floor of the nose. The edges of the remaining portion of the lip were then straightened with a scalpel and sutured together. A Logan face bow was applied to keep tension off the sutures. The wound has healed well, leaving the mouth less than one-third its normal size. This, however, was easily corrected by V incisions at the corners of the mouth.

In lacerations of the lips, an infra-orbital injection for the upper, and a mental injection of 2 per cent procaine solution for the lower, will often save the patient much pain and make it much easier for the operator to work.

When patients present lacerations which have street dirt in them, a prophylactic dose of 1,500 units of tetanus antitoxin is always given.

NOTE.—To improvise a cheek retractor, bend the handle of a spoon. Set the bowl of the spoon against the patient's cheek and retract the cheek by pulling on the handle and attach the handle to the back of the neck with adhesive tape. Such an improvised retractor makes it possible to do some of this work without assistance.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS. HOWARD A. CARTER, Secretary.

LIEBEL-FLARSHEIM (SW2-C) SHORT WAVE GENERATOR ACCEPTABLE

Manufacturer: The Liebel-Flarsheim Company, Cincinnati.

This unit is recommended by the manufacturer for medical diathermy and for minor electrosurgery. It is well constructed. The wavelength is about 25 meters. It is equipped with two 125-watt vacuum tubes and operates from a 60-cycle alternating current. The power input is about 550 watts. Since there is no acceptable method for measuring the output of diathermy machines, this value is not stated. Its shipping weight is about 150 pounds.

Fig. 1.—Liebel-Flarsheim (SW2-C) Short Wave Generator.

Either pad electrodes or a coil for electromagnetic induction may be used. The unit is cooled by a motor-driven forced draft fan. Operating this unit under full load indicated that the temperature rise of the transformer and the cabinet was within the temperature limits considered safe by the Council.

At the request of the Council, the Liebel-Flarsheim Company submitted data concerning the tissue heating effect in the human thigh. The firm reported that four turns of the inductance cable, two turns being above and two below the point of insertion of cannulas, were applied to the thigh. Thermocouples were introduced into the subcutaneous and deep-lying tissue (quadriceps extensor). After twenty-five minutes' treatment, the machine being operated at the patient's tolerance, the temperature rise, with the coil technic, was observed to be more than that obtained with conventional diathermy—the criterion for investigating short wave machines which the Council has adopted. In a clinic acceptable to the Council, the firm's report was confirmed.

Burns may be produced by this machine, but, with the observance of ordinary care, they may be avoided; their likelihood to occur is much less than with the use of conventional diathermy.

The machine was used by the Council's investigator in a clinic for several months, and he reported that it gave satisfactory service.

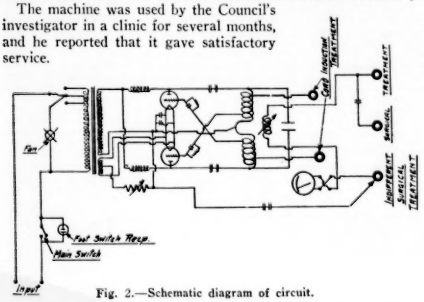

Fig. 2.—Schematic diagram of circuit.

In view of the foregoing report, the Council on Physical Therapy voted to include the Liebel-Flarsheim (SW2-C) Short Wave Generator in its list of accepted apparatus.

McINTOSH UNIVERSAL DIATHERMY UNIT ACCEPTABLE

Manufacturer: McIntosh Electrical Corporation, Chicago.

The manufacturer recommends this unit for medical and surgical diathermy. It is a cabinet model. The main line switch is mounted on the panel. The binding posts for the treatment cords are mounted on the front of the panel, and a four-gap spark gap covered by a metal screen is mounted on top. It has a four point "voltage selector switch" (rheostat) and a typical milliamperemeter, protected by fuses, with two scales, 0 to 1,000 and 0 to 4,000. There is a spiral coil mounted on a rotating rod in such a manner that the frequency in kilocycles is said to be altered from approximately 750 to 2,200. The unit weighs about 100 pounds.

Fig. 1.—McIntosh Universal Diathermy Unit.

At the request of the Council, the manufacturer submitted data containing a report of tests of the unit for power input and output, and for its spark gap and transformer temperature rise. The results recorded in the data were in agreement with the observations of the Council's investigator, and in conformity with the standards for diathermy machines previously established by the Council.

The Council's investigator reported that, from a clinical standpoint, the machine is a satisfactory device for ordinary

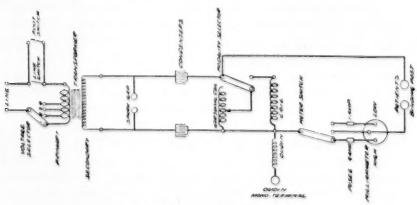

Fig. 2.—Schematic diagram of circuit.

local medical diathermy and for electrodesiccation and electrocoagulation.

In view of the foregoing report, the Council voted to include the McIntosh Universal Diathermy Unit in its list of accepted apparatus.

Council on Pharmacy and Chemistry

REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

PAUL NICHOLAS LEECH, Secretary.

GLUTAMIC ACID

A brand of glutamic acid was presented to the Council for consideration as an agent to be used in the treatment of myasthenia gravis and muscular dystrophy (progressive or pseudohypertrophic) and as generally interchangeable with aminoacetic acid, N. N. R.

The Council considered the relative therapeutic value of aminoacetic and glutamic acids, and, in the light of this, whether or not the latter is a nonessential product. The usefulness of certain amino acids in the treatment of these myopathies has been largely demonstrated with aminoacetic acid. Tripoli and his associates[1] are the only workers who have used glutamic acid for this purpose. They claim that it cost less than half as much as aminoacetic acid; they believe that it is a slightly superior creatine former and even less toxic (in animals) than the relatively harmless aminoacetic acid. Further studies by these workers[2] suggest that its efficacy is equal to that of aminoacetic acid.

Brand; Thomas, Milhorat and Technor,[3] however, have shown that there is no increase in creatinine demonstrated by patients with progressive muscular dystrophy when glutamic acid is administered. The Council has been informed that Shorr and Richardson in an article to be published will report confirmation of this finding. There appear to be no adequately controlled observations indicating that glutamic acid is of therapeutic value in muscle disease. Commercial prices at present do not indicate that this is a cheaper agent. The Council doubts the advisability of administering from 20 to 30 Gm. daily of this fairly strong organic acid, being of the opinion that it would be irritating to the stomach.

As a result of its consideration, the Council decided that there is not available sufficient confirmed, controlled evidence of the usefulness and harmlessness of glutamic acid to warrant acceptance at this time for inclusion in New and Nonofficial Remedies. A statement of the Council's consideration was sent the manufacturer of the submitted brand, on receipt of which the firm agreed to close active promotion of its brand. In the interest, however, of those who desire to know the Council's attitude on glutamic acid, publication of the foregoing statement was authorized.

NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary.

CONCENTRATED SOLUTION LIVER EXTRACT PARENTERAL-LEDERLE.—A sterile, aqueous solution, containing the nitrogenous nonprotein fraction G of Cohn et al. obtained from fresh mammalian liver, preserved with 0.5 per cent of phenol. Each cubic centimeter contains antianemic substance obtained from 100 Gm. of liver.

Actions and Uses.—Concentrated solution liver extract parenteral-Lederle is proposed for intramuscular injection in the treatment of pernicious anemia and sprue.

Dosage.—To insure optimum dosage for cases of pernicious anemia in relapse it is advisable to make an injection of 1 cc. each day for three or four successive days. In a series of cases

1. Tripoli, C. J., and Beard, H. H.: Muscular Dystrophy and Atrophy, Arch. Int. Med. **53**: 435 (March) 1934.
2. Tripoli, C. J.; McCord, W. M., and Beard, H. H.: Muscular Dystrophy, Muscular Atrophy, Myasthenia Gravis and Strabismus, J. A. M. A. **103**: 1595 (Nov. 24) 1934.
3. Brand, E.; Harris, M. M.; Sandberg, M., and Ringer, A. T.: Studies in Origin of Creatine, Am. J. Physiol. **90**: 296 (Oct.) 1929. Milhorat, A. T.; Technor, Fritz, and Thomas, Karl: Significance of Creatine in Progressive Muscular Dystrophy and Treatment of This Disease with Glycin, Proc. Soc. Exper. Biol. & Med. **29**: 609 (Feb.) 1932.

in which remissions have been thus initiated by the use of concentrated solution liver extract parenteral-Lederle there is evidence that injections of 1 cc. every two weeks provide sufficient active material to complete the remission and maintain a satisfactory blood picture. In complicated cases and those with extensive neurologic involvement, the optimum dosage may be much larger and must be determined for each patient.

Manufactured by the Lederle Laboratories, Inc., Pearl River, N. Y.

Vials Concentrated Solution Liver Extract Parenteral-Lederle, 1 cc.

Concentrated solution liver extract parenteral-Lederle is prepared as follows: A mixture of finely ground liver and water is acidified to the isoelectric point, *ph* 5.0-5.4. After partial coagulation of the liver proteins is effected by heating to 75-85 C. the pulp is separated by filtration, centrifugation or pressing and the aqueous filtrate is concentrated in vacuo to the consistency of a thin syrup. By careful fractional precipitation with large volumes of alcohol at low temperatures (4 C.) much inactive material (proteins) is precipitated and subsequently discarded. The alcoholic filtrate is concentrated in vacuo and sufficient alcohol added to precipitate the active material (fraction G) of Cohn et al. (Proceedings of the American Society of Biological Chemistry, *J. Biol. Chem.* **74:** lxix [July] 1927). The washed precipitate, generally known as "Cohn's fraction G," commonly obtained as a hygroscopic, brownish powder, in addition to the active antianemic factor, contains much inert matter. In order to obtain a concentrate of the active factor as free as possible from inert substances, the solution containing the fraction G of Cohn is treated with a special activated carbon. Subsequently the material is concentrated in vacuo so that each cubic centimeter represents material obtained from 100 Gm. of liver. The solution is then sterilized and 0.5 per cent of phenol added as a preservative.

FERRIC CHLORIDE.—For description see the U. S. Pharmacopeia and Useful Drugs under Ferri Chloridum.

Saf-T-Top 5% Ferric Chloride in 50% Glycerine Solution: A solution of ferric chloride 5 per cent in glycerin 50 per cent, marketed in ampules having a capillary opening, and containing 2 and 15 cc. This form is intended for use as a neutralizing agent of the toxicodendrol of poison ivy and poison sumac. It is applied externally.

Prepared by Robert A. Bernhard, Rochester, N. Y.

NOVOCAIN (See New and Nonofficial Remedies, 1935, p. 63, and THE JOURNAL, June 22, 1935, p. 2256).

The following dosage forms have been accepted:

Sterile Ampules Novocain Crystals for Spinal Anesthesia, 300 mg.
Sterile Ampules Novocain Crystals for Local Anesthesia, 500 mg.

ISOPROPYL ALCOHOL.—Propan-2-ol.—$CH_3.CH(OH).CH_3$.—obtained by the reduction of acetone or, as a product in the petroleum industry, by the absorption of olefin gases containing propylene in sulphuric acid, and hydrolyzing the resulting sulphuric acid esters.

Actions, Uses and Dosage.—Isopropyl alcohol, because it is a solvent for creosote, is used in the removal of that substance from the skin as a prophylactic agent against creosote burns. Isopropyl alcohol has been recommended for the disinfection of the skin and of hypodermic syringes and needles. As it is said not to affect the potency of solutions of insulin, it has been employed as a disinfecting agent in connection with the administration of this agent. Until further data are available, isopropyl alcohol should not be relied on to destroy such spore-bearing organisms as Clostridium tetani, Clostridium Welchii or Bacillus anthracis. It is not potable and should not be given by mouth.

Isopropyl alcohol is a clear, colorless, volatile liquid, having a characteristic odor and a slightly bitter taste, miscible with water in all proportions; also miscible with chloroform and ether. It is insoluble in salt solutions and may be recovered from aqueous mixtures by salting out with sodium chloride, sodium hydroxide, etc. Specific gravity at 25 C., from 0.780 to 0.790. Refractive index at 20 C., from 1.3770 to 1.3780. Isopropyl alcohol is volatized at low temperatures and boils at from 81 to 83 C. It does not affect blue or red litmus paper previously moistened with water when diluted with an equal volume of water.

Shake 20 cc. of isopropyl alcohol in a glass stoppered cylinder with 1 cc. of a freshly prepared solution of ammonio silver nitrate and allow to stand in diffused daylight for six hours: the mixture does not become more than faintly opalescent or acquire more than a faint brownish tint (*aldehyde*). To 5 cc. of isopropyl alcohol add 2 cc. of normal sodium hydroxide solution and 5 drops of a 1 per cent aqueous solution of sodium nitroprusside, mix thoroughly, finally make slightly acid with acetic acid: no purplish red color (*acetone*).

Evaporate 100 cc. of isopropyl alcohol in a platinum dish on a water bath, and dry at 100 C.: the residue does not exceed 0.01 per cent.

Saf-T-Top Isopropyl Alcohol, 98%: Isopropyl alcohol, 98 per cent, marketed in ampules having a capillary opening, and containing 2 and 15 cc. This dosage form is intended solely for the removal of creosote from the skin.

Prepared by Robert A. Bernhard, Rochester, N. Y.

MERCUROCHROME (See New and Nonofficial Remedies, 1935, p. 309).

The following dosage forms have been accepted:

Saf-T-Top Mercurochrome Solution (See New and Nonofficial Remedies, 1935, p. 312). Also marketed in ampules with a capillary opening, containing 15 cc. of the aqueous 2 per cent solution.

Prepared by Robert A. Bernhard, Rochester, N. Y.

Saf-T-Top Mercurochrome 2 per cent in 25 per cent Glycerine: A solution of mercurochrome, H. W & D., 2 per cent in a solution of 25 per cent glycerin, marketed in ampules with a capillary opening, containing 2 and 15 cc.

Prepared by Robert A. Bernhard, Rochester, N. Y.

RABIES VACCINE (See New and Nonofficial Remedies, 1935, p. 380).

Lee Laboratories, Columbus, Ohio.

Rabies Vaccine, Semple Method (Lee).—An antirabic vaccine prepared according to the general method of David Semple (phenol killed). The fixed virus of rabies is injected subdurally into normal rabbits. These rabbits show definite symptoms of rabic paralysis in from six to seven days. At the time of complete paralysis they are bled to death and the brain is removed aseptically. Necropsy shows the rabbits to be normal, and sterility tests are made on the brain tissue to insure freedom from bacterial contamination. Sterile brains are then emulsified in 1 per cent of phenol by shaking with pyrex glass beads. The emulsion is passed through a 100 mesh sieve, and the whole made to a 16 per cent emulsion, and heated at 37.5 C. for twenty-four hours in the incubator in order to kill the virus. After removal from the incubator it is made to an 8 per cent emulsion by adding an equal volume of physiologic solution of sodium chloride. The finished product is an 8 per cent brain emulsion containing 0.5 per cent of phenol and 0.85 per cent of sodium chloride.

The finished product is tested for absence of living virus by injection into rabbits. Injections are also made into guinea-pigs and mice to check against contamination with tetanus bacilli.

Rabies vaccine, Semple method (Lee) is marketed in packages containing seven and fourteen 1 cc. vials, respectively. All the doses are of the same potency; one dose (1 cc.) is to be given daily over a period of fourteen days.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORTS.

RAYMOND HERTWIG, Secretary.

NOT ACCEPTABLE

(*a*) LOEB'S GENUINE GLUTEN BREAD (FRESH)
(*b*) LOEB'S GENUINE GLUTEN BREAD SLICED AND TOASTED

Manufacturer.—Loeb Dietetic Food Company, New York.

Description.—(*a*) Gluten bread prepared from gluten flour, water, shortening, yeast and salt. The gluten flour contains on a water-free basis not less than 7.1 per cent nitrogen, not more than 56 per cent nitrogen-free extract (protein factor 5.7) and not more than 44 per cent starch as determined by the diastase method. (*b*) Toasted slices of the gluten bread.

Analysis (submitted by the manufacturer).—

(*a*)	per cent
Moisture	24.9
Ash	2.5
Fat (ether extraction method)	3.1
Protein (N × 5.7)	35.8
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	31.3

(*b*)	per cent
Moisture	7.6
Ash	5.7
Fat (ether extraction method)	6.4
Protein (N × 5.7)	43.8
Crude fiber	0.4
Carbohydrates other than crude fiber (by difference)	36.1

Calories.—(*a*) 3.1 per gram; 88 per ounce. (*b*) 3.8 per gram; 108 per ounce.

Claims of Manufacturer.—The package labels bear the claims "For Use in Restricted Diet under Directions of a Physician. . . . Two slices of Loeb's Genuine Gluten Bread contain less carbohydrates than a single slice of ordinary white bread." A booklet "Diabetes and the Restricted Diet" states that "this booklet [contains] a list of delicious recipes, all of which marked with an asterisk are suitable for the reducing diet. White bread, cakes and candies should be entirely discarded, and in their place Loeb's Sliced and Toasted Gluten Bread, and other starch-free and starch-reduced foods should be consumed."

Uselessness as a Special Purpose Food.—Loeb's Genuine Gluten Bread and Loeb's Genuine Gluten Bread Sliced and Toasted are manufactured specially for use in diets restricted in dextrose formers. To be eligible for acceptance, such type of bread and toast shall contain dextrose formers yielding dextrose in an amount not greater than 3.3 Gm. per hundred cubic centimeters (the dextrose equivalence being computed as the carbohydrate, plus 58 per cent of protein, plus 10 per cent of the fat content of the food). Dextrose formers of these breads on the other hand yield many times 3.3 Gm. of dextrose per hundred cubic centimeters.

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There is authoritative evidence that commercially prepared special diabetic foods are of limited usefulness to the diabetic patient and that the availability of insulin makes them no longer necessary. Artificial substitutes for ordinary foods are not to be favored; it is much better for the diabetic patient to learn how to plan his diet with foods in common use and readily available. The diet should be exactly prescribed in carbohydrate, protein and fat and total calories.

The designation of a food as a "diabetic food" merely because it is low in carbohydrates is now unwarranted and misleading and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Except for the necessity of restricting foods to avoid overstepping the food tolerance, there are no special diabetic nutritional requirements. The exploitation of starch-free or low carbohydrate foods containing an excess of protein for use by diabetic patients is unwarranted. Protein may be tolerated almost as poorly, if not quite as poorly, as starch in diabetes.

These gluten breads have no specific reducing properties and are no more useful than ordinary white bread in special reducing diets. The caloric content is similar to that of usual bread. The fact that the starch content may be somewhat less than that of usual bread does not specifically qualify the products for a reducing diet.

Because Loeb's Genuine Gluten Bread and Loeb's Genuine Gluten Bread Sliced and Toasted are adjudged without usefulness or special adaptability for inclusion in diets for obesity or diets restricted in dextrose formers, they will not be listed among the accepted foods of the Committee on Foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

HULBURT'S BRAND CALIFORNIA ORANGE JUICE (SWEETENED)

Manufacturer.—Hulburt's Fruit Products, Inc., New York.

Description.—Canned pasteurized California Valencia orange juice with added sucrose, retaining in high degree the natural vitamin C content.

Manufacture.—Ripe standard grade Valencia oranges are washed, graded (inferior or defective fruit is removed), halved by machine and reamed by hand. The juice is screened to remove coarse pulp and rag, pasteurized in pipes at 82 C., and sealed in enamel lined cans. The equipment is monel metal or glass lined.

Sucrose is added in varying quantities to produce standard uniform sweetness.

Analysis (submitted by manufacturer).—

	per cent
Moisture	86.7
Total solids	13.3
Ash	0.4
Fat (ether extract)	0.5
Protein (N × 6.25)	0.9
Reducing sugars as invert sugar	5.1
Sucrose	5.3
Crude fiber	0.03
Carbohydrates (by difference)	10.5
Titratable acidity as citric acid	1.0

Calories.—0.5 per gram; 14 per ounce.

Vitamins.—Chemical assay for cevitamic (ascorbic) acid shows the product to approximate fresh orange juice in vitamin C content.

Claims of Manufacturer.—This canned orange juice retains in high degree the nutritional values of the natural fruit juice and is intended for all the dietary and table uses of orange juice.

TREESWEET BRAND CALIFORNIA LEMON JUICE

Manufacturer.—TreeSweet Products Co., Los Angeles.

Description.—Canned California lemon juice largely retaining the natural nutritional values.

Manufacture.—Juice is expressed from selected, tree-ripened fruit, processed and canned as described for TreeSweet Pure California Orange Juice (THE JOURNAL, June 15, 1935, p. 2187).

Analysis (submitted by manufacturer).—

	per cent
Moisture	89.7
Total solids	10.3
Ash	0.4
Fat (ether extract)	0.6
Protein (N × 6.25)	0.4
Reducing sugar, as invert sugar	1.8
Crude fiber	0.01
Carbohydrates other than crude fiber (by difference)	2.1
Volatile acid as acetic	0.7
Fixed acid as citric	6.0
*p*H	2.3

Calories.—0.16 per gram; 4.6 per ounce.

Vitamins.—Rich source of vitamin C.

Claims of Manufacturer.—No added sugar or preservative. The process used enables retention in high degree of natural food values.

HORMEL BRAND CHICKEN BROTH WITH RICE

Manufacturer.—George A. Hormel & Co., Austin, Minn.

Description.—Chicken broth with rice, salt and sugar and flavored with water extract of carrots, celery, onions and peppers.

Manufacture.—The carrots are peeled by machine, pared by hand, diced and washed. The celery is freed of root and leaves, and the separate stalks are cleaned by hand. The onions are peeled and chopped. The birds are singed and the pin feathers removed. The birds are inspected by government inspectors, the feet and heads are sawed off, the viscera are removed, and the birds are washed and sawed into pieces. Hearts and gizzards are retained for the broth.

The birds with a definite quantity of carrots, celery, onions and peppers in muslin sacks are placed in the required amount of water, seasoned with salt and boiled under pressure for two hours at 230 F. The fat is skimmed off. The broth is screened and a given quantity filled into cans with definite amounts of rice and skimmed fat. The cans are sealed and processed.

Analysis (submitted by manufacturer).—

	per cent
Moisture	93.9
Total solids	6.1
Ash	1.2
Fat (ether extract)	1.7
Protein (N × 6.25)	2.1
Crude fiber	trace
Carbohydrates (by difference)	1.1

Calories.—0.3 per gram; 9 per ounce.

JOHNSON'S BESTOVALL BRAND TOMATO JUICE

Distributer.—H. A. Johnson Company, Boston and New York.

Packer.—American Packing Corporation, Evansville, Ind.

Description.—Pasteurized tomato juice with added salt; retains in high degree the natural vitamin content. The same as Loudon Brand Tomato Juice (THE JOURNAL, June 25, 1932, p. 2289).

BOOKLET "INFANT FEEDING WITH IRRADIATED EVAPORATED MILK"

Sponsor.—Irradiated Evaporated Milk Institute, Chicago.

Description.—Booklet for distribution to physicians only containing information on the preparation of irradiated evaporated milk, its nutritional advantages for the feeding of normal infants as well as its use under special conditions, such as prematurity, athrepsia, diarrhea and milk allergy. Detailed regular milk and acid milk formulas and lists of references to recent clinical literature are given.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, NOVEMBER 23, 1935

MEDICAL LITERATURE AND MEDICAL LIBRARIES

The growth of medical literature and its applicability to the practice of medicine is one of the interesting historical phenomena associated with our profession. When printing with movable type was developed, all manner of learning received a mighty impetus. Because medicine is so close to the life of man, medical contributions were among the first to be published. Very early, however, medicine was merely included in publications dealing with science in general. Then as medicine began to specialize and as the value of medical publications for medical advancement began to be realized, periodicals multiplied tremendously.

In a lecture recently delivered by Prof. William Bulloch[1] he reminds us that John Shaw Billings estimated in 1881 that there were 180,000 doctors in the world and that 1,600 of them were contributors to medical literature. In the medical journals of 1879 available to him he counted 20,000 original articles. Today it is estimated that there are something like 400,000 doctors in the world, and the world list of scientific periodicals indicates 23,000 in all, of which 5,000 are medical. Of those periodicals listed as medical it is quite certain that the majority are mediocre and could be committed to oblivion without loss to the profession. Among these are house organs for proprietary products, bulletins recording local statistics, trade journals associated with the promotion of special institutions and similar publications.

In his survey of medical literature Professor Bulloch used as a basic work the *Index Catalogue* of the Surgeon General's Library. Up to 1893 he counted 7,000 articles and books on syphilis. Between 1893 and 1912 there were 14,000 new articles on the subject and from 1913 to 1932, 21,000 more. As an example of the way in which certain subjects receive medical attention, he notes in the course of twenty years 6,780 articles on heart disease and 1,280 on excision of the tonsils. Although vitamins were first interesting around 1914, more than 1,000 articles on vitamins had been published by 1932. Between 1893 and 1932 there were published 34,000 articles on tuberculosis, or at the rate of two new articles on tuberculosis every day.

In his consideration of the indexing of such literature and its availability to the profession, Professor Bulloch paid special tribute to the *Index Catalogue* of the Surgeon General's Library, regarding it as the greatest publication of its kind ever achieved. He recorded also the history of the *Quarterly Cumulative Index Medicus* and said that an immense debt of gratitude was owing from the world of medicine to the American Medical Association for the publication of this work. Without the *Quarterly Cumulative Index Medicus* the vast amounts of medical periodical literature, now approximating a quarter of a million titles every six months, would be for the most part wasted. This is the literature made available to the medical profession through the *Quarterly Cumulative Index Medicus*. This index now provides a reference service to 1,200 medical publications, although only a few libraries in the entire American continent even approximate this number of publications. Indeed, the majority of medical libraries receive well under 200 medical periodicals. Nevertheless, by a system of lending, all the publications received in the Army Medical Library and in the headquarters of the American Medical Association are available to physicians. The *Quarterly Cumulative Index Medicus* represents a considerable financial burden to the Association. Professor Bulloch's commendation is a well merited recognition of this service to scientific medicine.

1. Professor Bulloch's Schorstein Lecture, Brit. M. J. 2: 810 (Oct. 26) 1935.

RADIANT ENERGY AND BONE HEALING

The important functions that have been assigned in experimental and clinical medicine to radiant energy of certain wavelengths have given tremendous impetus to researches in this field. The rôle of ultraviolet radiation in metabolism and the relationship between this type of radiation and vitamin D are observations that not only stimulate the scientific mind but appeal to the imagination of the public at large. This, unfortunately, has resulted in much commercialism and has set up a false conception of radiant energy as a panacea. Sunlight or artificial radiation is not a specific form of treatment and should not be used without medical guidance and adequate equipment. This form of therapy may play a prominent part in certain abnormal conditions; it is of minor importance in the life of normal persons who are provided with a completely adequate diet.

The proper use of radiation and irradiated materials has often caused remarkable results, among the more prominent of which are the effects on serum calcium and inorganic phosphorus in the healing of rickets and in osteomalacia. These results have led to the study of the use of radiant energy in the healing of fractures.

Two widely divergent views have developed. On the one hand there is the opinion, supported by clinical experience, that ultraviolet radiation is of some benefit in cases of ununited fractures.[1] In contrast to this view is that which holds that ultraviolet radiation does not influence the union of fractures [2] and that the effect of radiation on serum calcium and phosphorus is of little significance in this respect. It would seem that there is no definite correlation between analytic variations of these two elements and the healing of the fracture.[3]

A detailed investigation of the effect of carbon arc radiation on the healing of bone has recently been reported by Sweeney and Laurens.[4] Experimental fractures of the fibula were studied in twenty-five normal dogs and eighty normal rats. In the majority of the experiments with the dogs, each animal served as its own control; that is, the fibula on one side was fractured, and then, after completely healing, the fibula on the other side was broken in as similar a manner as possible. During the healing of the second fracture, the animal was irradiated. In some instances the procedure was varied by irradiating the animal while the first fractured fibula was healing and not irradiating after the second fracture was made. In still another group of dogs, carbon arc radiation was administered in the same amounts per unit of time during the healing of the two fractures. Finally, in a few experiments irradiation was not given during the healing period.

In the studies with the rat, the large number of animals available made it possible to use a group of from seven to ten animals as controls for two irradiated groups of a series. The fractures in all animals were identical and each rat had only one fracture and one period of healing. Measured amounts of carbon arc radiation were given during the healing periods, and roentgenograms were taken at intervals to show the progress of the repair process.

Determinations also of serum calcium and phosphorus were conducted on the dogs at frequent intervals. The results of these carefully conducted experiments indicate that during the stated periods of healing, and omitting consideration of certain abnormal healing rates in several dog experiments, the average repair time for all the fractures was 3.7 days shorter when the animals were irradiated than when they were not. It is striking that the acceleration of healing was obtained with one type of carbon lamp; irradiation also from another source was used but, in contrast to the former, it actually retarded the healing process. This result may be attributed to the different spectrums produced by the two types of lamps.

Although the extent of shortening of the healing period of the fractures may be too small to be of prime practical or economic significance, the results seem to contribute some helpful information to the controversy regarding the processes involved. The calcium and phosphorus determinations demonstrate that there is no apparent correlation between the concentrations of these elements and the rate of healing of a fracture and ossification. This would seem to suggest that the calcium-phosphorus product of the serum is of little significance as a prognostic index of the rate of bone regeneration. It is true that these experiments were conducted on presumably normal animals with normal bone-regenerating ability. Sweeney and Laurens point out the possibility that, with abnormal animals under the same experimental conditions, all other factors remaining constant, the results might have been a great deal different. This is particularly true in certain cases of fracture due to abnormal bone metabolism.

1. This subject has been reviewed by Aitken, Robert: Ultra-Violet Light Radiations and Their Uses, Edinburgh, Oliver & Boyd, 1930. Laurens, Henry: The Physiological Effects of Radiant Energy, New York, Chemical Catalog Company, Inc., 1933.
2. Coulter, J. S., and Smith, E. M., Jr.: Radiology **16**: 737 (May) 1931.
3. Murray, C. R.: Minnesota Med. **13**: 137 (March) 1930.
4. Sweeney, H. M., and Laurens, Henry: Effect of Carbon Arc Radiation on Healing of Bone, Arch. Surg. **31**: 395 (Sept.) 1935.

DUST STORMS AND HEALTH

The extraordinary conditions of drought in parts of Kansas, Colorado, New Mexico, Texas and Oklahoma, which gave rise to dust storms of unprecedented intensity and duration from February to May of this year, received wide interest and publicity. A study of the possible effect on health of these dust storms has recently been published.[1] April 29 a "dust conference" was held at Liberal, Kan., the approximate center of the "dust bowl." State health officers from Oklahoma, Colorado and Kansas were present. At this time a comparison of morbidity and mortality for certain of the acute infectious diseases showed similar increases in the three states. Considerable interest was expressed in the bacterial and chemical content of the dust. Two of the Kansas sanitary and public health officials made trips into the dust area and exposed agar plates to secure an index of the number of micro-organisms present in the air during dust storms. The predominating bacteria observed were spore-forming soil types. Molds were almost as numerous as bacteria, and some yeasts were observed. Colon bacillus determinations were made. Characteristic organisms of this group, however, were obtained from only one sample of the nineteen tested.

The rôle of siliceous dusts in the production of silicosis is well known. The harmfulness of a given dust is dependent on three factors: the amount suspended in the air, the duration of exposure, and the particle size. It is now generally agreed that in the case of quartz-containing dusts the dangerous particles are usually between 0.5 and 5 microns in diameter and are almost always less than 10 microns. The six dust samples analyzed gave a silica content varying from

1. Brown, E. G.; Gottlieb, Selma, and Laybourn, R. L.: Dust Storms and Their Possible Effect on Health, Pub. Health Rep. **50**: 1369 (Oct. 4) 1935.

66.9 to 92.9 per cent. The size of the particles varied from 2 to 770 microns. The average values were much higher than those reported for the usual industrial and outdoor dusts.

Kansas experienced its most severe measles epidemic during the five months from January 1 to June 8, with 40,000 cases reported as compared with the previous high total of 22,464 for the twelve months of 1917. In addition to measles, acute respiratory infections prevailed throughout the state in unusually large numbers. Numerous cases also of streptococcic sore throat and corneal ulcers and eye infections were reported. There was no evidence, however, that any pathogenic organisms were carried by dust and therefore the direct cause of the increase in respiratory infections could not be attributed to this factor. The dust was exceedingly irritating to the mucous membranes of the respiratory tract, and this appeared to be a definite contributory factor in the development of many acute infections.

The action on health of dust storms may thus be divided into "immediate" and "future" effects. The former are manifest by the increase in morbidity and mortality from the acute infections of the respiratory tract probably due more to the irritating effect of the dust than to the carrying of pathogenic organisms. The future effect is unknown. It is possible that over a long period the effect might be similar to that seen in persons exposed to mine and other industrial dusts, though the difference in average size of the particles might prevent this from occurring. The most important conclusion is that the dust proofing of houses and the wearing of masks are essential to the comfort and welfare of persons living in areas affected by similar dust storms.

Current Comment

ABSORPTION FROM THE MIDDLE EAR

The fact that epithelial tissue other than that lining the lumen of the gastro-intestinal tract may be permeable to a large number of substances is well known. Vitamin D, for example, may be absorbed through the skin, and lead readily passes through pulmonary epithelium. Recently the possibility of the absorption of substances from the middle ear has been studied. In the normal subject this question would have little significance, as the middle ear, in addition to being small, is closed externally and is rather remotely open to the posterior part of the nasal cavity. In cases of infection of the middle ear, however, an absorption of toxic substances might well occur, as is indicated by the development of fever, leukocytosis and general malaise. Experimental data favoring this view have been obtained.[1] Solutions of drugs that exert easily recognizable effects, such as nicotine, which raises blood pressure, and sodium nitrite, which lowers blood pressure, were injected through the ear drum into the middle ear of dogs. The position of the animal's head was adjusted so that none of the injected material could escape by way either of the eustachian tube or of the external canal. Nicotine produced a maximal rise in blood pressure within five minutes after injection, and in one instance within thirty-six seconds. The maximum decrease in blood pressure from sodium nitrite occurred in seven minutes and from histamine in three minutes. Similar evidence of rapid absorption was obtained with other drugs, including atropine, pilocarpine, strychnine, cocaine, procaine, ethyl alcohol, methyl alcohol, quinine, hydrochloric acid, hypertonic sodium chloride, and sodium hydroxide. These observations leave little reason to doubt that the absorption of a variety of substances from the middle ear may occur.

1. Ross, E. L., and Rawson, R. W.: Absorption from the Middle Ear, Arch. Otolaryng. **22**: 312 (Sept.) 1935.

PIGMENTS OF HUMAN FAT

The fat of many mammals, including man, contains a colored material the nature of which is not clearly understood. An interesting contribution to this problem has been made recently by two Hungarian investigators.[1] Human fat, usually obtained from the abdominal wall or mesenteries, was taken at necropsy from patients who had died of various diseases. The fat was saponified and the remaining pigment was fractionated into its components by means of organic solvents and adsorption in a column of calcium hydroxide. Four distinct pigments were obtained, which were subsequently identified by means of the spectroscope as carotene, lycopene, xanthophyll and capsanthine. Carotene and lycopene were isolated also in crystalline form. Each of these four pigments is known to be widely distributed in the plant kingdom. Some information concerning the actual amounts of the pigments present in the original fat was secured by comparing their solutions with known colored solutions in a microcolorimeter. In the majority of cases the values for total pigment varied between 1 and 3.5 mg. per kilogram of fat; carotene and xanthophyll were present in larger amounts than were lycopene and capsanthine. In a case of cancer of the uterus and in one of icterus, excessively high lipochrome values, 6.4 and 15.5 mg. per kilogram respectively, were found. The increase appeared to be a result of an equal elevation in the concentration of each of the four pigments. The significance of these unique observations is as yet largely a matter of conjecture. Apparently the nature of the disease processes in the subject is of some importance. Undoubtedly the chief source of the pigments was the vegetable constituents of the diet. Indeed, it was observed that the fat from subjects who had ingested considerable amounts of red pepper with their food was usually quite rich in capsanthine, one of the pigments of the pepper plant. Furthermore, it is well known that man cannot synthesize carotene, the provitamin A, but depends ultimately on plants for his supply.

1. Zechmeister, L., and Tuzson, P.: Contribution biochemique à l'étude des pigments de la graisse humaine, Bull. Soc. chim. biol. **17**: 1110 (July-Aug.) 1935.

Association News

THE KANSAS CITY SESSION

Appointments of Section Representatives to Scientific Exhibit

Representatives from the various sections of the Scientific Assembly have been appointed to the Scientific Exhibit for the Kansas City session as follows:

PRACTICE OF MEDICINE:
Irving S. Wright, New York.

SURGERY, GENERAL AND ABDOMINAL:
R. S. Dinsmore Jr., Cleveland.

OBSTETRICS, GYNECOLOGY AND ABDOMINAL SURGERY:
H. Close Hesseltine, Chicago.

OPHTHALMOLOGY:
Georgiana Dvorak-Theobald, Oak Park, Ill.

LARYNGOLOGY, OTOLOGY AND RHINOLOGY:
John L. Myers, Kansas City, Mo.

PEDIATRICS:
F. Thomas Mitchell, Memphis, Tenn.

PHARMACOLOGY AND THERAPEUTICS:
Ralph H. Major, Kansas City, Mo.

PATHOLOGY AND PHYSIOLOGY:
J. P. Simonds, Chicago.

NERVOUS AND MENTAL DISEASES:
Peter Bassoe, Chicago.

DERMATOLOGY AND SYPHILOLOGY:
Clark W. Finnerud, Chicago.

PREVENTIVE AND INDUSTRIAL MEDICINE AND PUBLIC HEALTH:
Paul A. Davis, Akron, Ohio.

UROLOGY:
Russell S. Ferguson, New York.

ORTHOPEDIC SURGERY:
R. L. Diveley, Kansas City, Mo.

GASTRO-ENTEROLOGY AND PROCTOLOGY:
J. A. Bargen, Rochester, Minn.

RADIOLOGY:
S. W. Donaldson, Ann Arbor, Mich.

Application blanks for space in the Scientific Exhibit may be obtained from any of these representatives or from the Director, Scientific Exhibit, 535 North Dearborn Street, Chicago.

RADIO BROADCASTS

The American Medical Association broadcasts over the Blue network and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

The next three programs are as follows:

November 26. Common Household Emergencies, W. W. Bauer, M.D.
December 3. Tuberculosis, Morris Fishbein, M.D.
December 10. Hunting Accidents, Morris Fishbein, M.D.

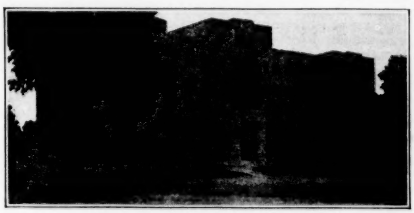
This program is broadcast also on the short waves through KDKA, Pittsburgh, over station W8XK, 11,870 and 12,210 kilocycles.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

New Medical Building for State University.—The new building of the University of Arkansas School of Medicine was opened for classes October 1. Built with a loan and grant of $500,000 from the Public Works Administration, the new structure, accommodating 300 students, is five stories high with a sixth story, suggesting a penthouse, in the center. It is of modern American architecture with an exterior of buff-colored face brick and limestone trim. The main entrance is of Batesville limestone. Each department has been allotted space on the first floor. The second floor is occupied by the dean's office, general offices, library, cafeteria and lecture room. The pathology and bacteriology departments occupy the third floor with laboratories for each, museum for pathologic specimens, laboratory for student technicians and an assembly room. The fourth floor is divided between the physiology and chemistry departments. The fifth floor is given over to the departments of anatomy and histology. The sixth floor provides space for a small laboratory for distillation of water, an incinerator, a small research laboratory, and cages for animals used in teaching and research. A door opens from the penthouse to the roof, where there are larger dog cages, with concrete houses to



University of Arkansas Medical Building

protect the animals from the elements, and three pools for frogs and terrapins used by physiology classes. The Folsom Clinic, formerly in a building adjoining the old medical structure, occupies the first floor and half of the second. Dr. Frank Vinsonhaler has been dean of the school of medicine since 1927 and associated with it since 1893. Although designated a department of the old Arkansas Industrial University, the medical school was not actually affiliated with it and was operated by its physician-sponsors for thirty-two years as a private institution. In 1911 the legislature accepted an offer of the faculty of the school to transfer the property to the state, provided it would be maintained as a part of the University of Arkansas. Since 1912 it has been operated in the old statehouse, where it was moved at that time.

CALIFORNIA

Psittacosis Reported.—Psittacosis was believed the cause of one death and two cases of illness in San Francisco recently, newspapers reported October 24. What was thought to be a new case of the disease was on that day under observation in the San Francisco Hospital.

Changes in Faculty at Stanford.—Dr. Arthur A. O'Neill, a member of the faculty of Stanford University School of Medicine since 1913, has been made assistant clinical professor of medicine, emeritus, according to a recent announcement from the dean, Dr. Loren R. Chandler. James P. Baumberger, D.Sc., has been promoted from associate professor to professor of physiology and Dr. Maurice L. Tainter from associate professor to professor of pharmacology. Other promotions include those of Charles E. Clifton, Ph.D., from assistant professor to associate professor of bacteriology; John Field II, Ph.D., from assistant professor to associate professor of physiology; Drs. Victor E. Hall from assistant professor to associate professor of physiology, and John K. Lewis from assistant professor to associate professor of medicine.

Memorial Plaque Unveiled.—A bronze plaque was unveiled at the library of the Los Angeles County Medical Association, November 7, in honor of the late Dr. Theodore C. Lyster, Los Angeles. Dr. George Dock, Pasadena, chairman of the library committee, presided. Dr. Lyster graduated from the University of Michigan Medical School, Ann Arbor, in 1899. He entered the U. S. Army in 1900 and was advanced through the various grades until 1930, when he was retired with the rank of brigadier general. He was chief of aviation and professional services in the surgeon general's office, Washington, D. C., in 1917-1918, for which he received the Distinguished Service Medal. For four years he was a director of yellow fever elimination for the Rockefeller Foundation. In 1913, during the American occupation, he was chief health officer of Vera Cruz, Mexico. He was a past president of the Southern California Medical Association and at the time of his death in 1933 was associate clinical professor of ophthalmology, University of Southern California School of Medicine, Los Angeles. Dr. Lyster was interested in the Barlow Library, serving first as trustee and later as president.

DELAWARE

State Medical Election. — Dr. Joseph B. Waples Jr., Georgetown, was chosen president of the Medical Society of Delaware at the recent annual meeting in Wilmington; he will take office January 1. Dr. William H. Speer, Wilmington, was reelected secretary. The society will hold its next annual meeting in Rehoboth, October 12-14.

DISTRICT OF COLUMBIA

Personal.—Dr. Hugh S. Cumming, surgeon general, U. S. Public Health Service, has been appointed one of an executive committee of ten, named by the Health Section of the League of Nations at its recent meeting in Geneva. Dr. Cumming was one of the few delegates representing nations outside the league who were appointed to the special group.

Remington Medal to Dr. Hilton.—Samuel Louis Hilton, Pharm.D., Washington, was presented with the Remington Medal by the New York branch of the American Pharmaceutical Association, October 19. The presentation was made at a dinner given to Dr. Hilton by the New York branch, the District of Columbia Pharmaceutical Association, the District of Columbia Veteran Druggists' Association, the faculty of the school of pharmacy of George Washington University, and the District of Columbia Board of Pharmacy. The medal is awarded annually to the man or woman who has done most for American pharmacy during the preceding year. Dr. Hilton, who has served on the U. S. Pharmacopeia Revision Committee, has been secretary of the district board of pharmacy for eight years.

ILLINOIS

Society News.—Dr. Lee C. Gatewood, Chicago, discussed the diagnosis and treatment of colitis before the Peoria City Medical Society, November 5.——Dr. M. Herbert Barker, Chicago, addressed the La Salle County Medical Society, October 30, on nephritis, and Dr. George E. Shambaugh Jr., "What Can Be Done for Sinus Disease."——Dr. Abraham F. Lash, Chicago, discussed "Puerperal Sepsis" before the Will-Grundy County Medical Society in Joliet, October 30.——Dr. Karl A. Meyer, Chicago, discussed "Regional Enteritis: Symptoms, Diagnosis and Treatment" before the Adams County Medical Society in Quincy, November 11.——Dr. John Albert Key, St. Louis, discussed fractures of the joints before the Madison County Medical Society at a meeting in Alton, November 1.

Chicago

Course in Mental Hygiene. — The management of children's behavior problems is the theme of a course that opened at the University of Illinois College of Medicine, November 18, to continue for eight weeks. The meetings will be held at the Institute for Juvenile Research and the fee is $10. The course is of particular interest to pediatricians, but other interested physicians are invited.

Dr. Hastings Goes to Harvard. — A. Baird Hastings, Ph.D., has resigned as professor of biochemistry in the department of medicine, University of Chicago, to accept the Hamilton Kuhn professorship in biologic chemistry at Harvard Medical School, Boston, succeeding the late Otto Folin. Dr. Hastings studied at the University of Michigan and Columbia University, receiving the degree of doctor of philosophy from the latter school. He served as a chemist with the U. S. Public Health Service from 1917 to 1921, was an assistant at the Rockefeller Institute for Medical Research from 1921 to 1922 and associate from 1922 to 1926, when he became professor of physiologic chemistry at the University of Chicago. Since 1928 he has been professor of biochemistry in the department of medicine. Dr. Hastings was visiting professor to Peiping Union Medical College in 1931.

Retiring Professors Honored.—Three professors retiring from the faculty of Loyola University School of Medicine were honored at a dinner at the Palmer House, November 14. Dr. Ulysses J. Grim is retiring as head of the department of otolaryngology; Dr. George W. Mahoney of the department of ophthalmology, and Dr. Frank M. Phifer, the department of genito-urinary diseases. Dr. Grim, who has been associated with Loyola since 1910, will be succeeded by Dr. George T. Jordan, clinical professor of ear, nose and throat diseases. Dr. Carl F. Schaub, clinical instructor in ophthalmology, will succeed Dr. Mahoney, who has been connected with the school since 1918. Dr. Phifer's successor will be Dr. Herbert E. Landes, clinical professor of urology. Dr. Phifer was appointed professor in 1919 and has been head of the department since 1927. The new appointees will serve until permanent heads are chosen, it was stated. Reuben M. Strong, Ph.D., secretary of the medical school faculty, was toastmaster at the dinner, and Dr. Louis D. Moorhead, dean of the school, gave the principal address.

Society News. — A clinical dermatology program was presented before the Chicago Medical Society, November 6; representing the medical school of the University of Illinois were Drs. Theodore Cornbleet and Herbert Rattner; Loyola University, Benjamin Barker Beeson and Vincent B. Bowler; Northwestern University, Arthur W. Stillians and Erwin P. Zeisler, and Rush Medical College, Edward A. Oliver and Michael H. Ebert. Speakers before the society, November 13, were Drs. James S. McLester, Birmingham, President, and James Tate Mason, Seattle, President-Elect of the American Medical Association, on "Clinical Aspects of Nutritional Failure in America" and "Some Considerations in the Etiology and the Surgical Treatment of Peptic Ulcers," respectively.

INDIANA

Debate on Socialized Medicine. — Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, and William Trufant Foster, director of the Pollak Foundation, will discuss the negative and affirmative aspects, respectively, of socialized medicine, December 7, when the Indiana High School Debating League will hold a conference at Purdue University, Lafayette.

Society News. — A symposium on poliomyelitis was presented before the Lawrence County Medical Society, November 6, by Drs. Virgil E. Simpson, William H. Allen, James H. Pritchett and Richard T. Hudson, all of Louisville, Ky.—— Dr. Harlan A. English, Danville, discussed "Diagnosis and Treatment of Disorders of the Prostate" before the Fountain-Warren County Medical Society in Covington, November 7. ——At a meeting of the Huntington County Medical Society, October 5, Dr. Murray N. Hadley, Indianapolis, spoke on "Appendicitis in Children."—— Dr. Bernard Fantus, Chicago, discussed "Therapy of Cough" before the Allen County Medical Society in Fort Wayne, November 5.——Dr. Arthur N. Ferguson addressed the Fort Wayne Academy of Medicine, October 22, on "Mechanics of Referred Pain."

KANSAS

Society News.—Drs. Charles C. Conover and Everett R. Deweese, Kansas City, discussed "Chronic Functional Disorders of the Colon" before the Kansas-Nebraska Medical Association, October 17, in Hiawatha.——Speakers before the Butler-Greenwood County Medical Society in Eureka, October 18, included Dr. Howard E. Marchbanks, Pittsburg, on "Hypertensive Heart Disease."——The Northwest Kansas Medical Society was addressed in Norton, October 23, by Drs. Leroy A. Calkins, Kansas City, Mo., and Charles F. Taylor, Norton, on "Carcinoma of the Cervix" and "Surgery in Pulmonary Tuberculosis," respectively.

LOUISIANA

Society News.—At a meeting of the Orleans Parish Medical Society, November 11, Drs. Gladys Richarda Williamson and Robert A. Strong, New Orleans, discussed "Erythroblastic Anemia"; Idys M. Gage, "Pilonidal Sinus," and Charles B. Odom, "A Review of Page's Epidural Anesthesia with a Report of 100 Cases."——At a meeting of the Sixth District Medical Society, October 24, in Jackson, speakers were Drs. Gilbert C. Anderson, New Orleans, "Signs and Symptoms of Brain Diseases," and Irvine Ashton Robins, Baton Rouge, "Coronary Thrombosis."

MINNESOTA

Special Scientific Session.—The Ramsey County Medical Society arranged a special scientific session in St. Paul, November 22-23. Friday evening, Drs. Arnold Schwyzer and Joseph Borg, both of St. Paul, discussed pain in the right side of the abdomen, while Saturday morning was given over to a clinical pathologic conference under the leadership of Dr. John F. Noble. Wisconsin physicians attending the Wisconsin-Minnesota football game were invited.

Veterinarian Honored.—At the annual dinner of the Minnesota Public Health Association in Minneapolis, November 22, Charles E. Cotton, D.V.M., secretary and executive officer of the Minnesota Livestock Sanitary Board, was the guest of honor, in recognition of his work in the eradication of bovine tuberculosis. Speakers at the dinner included Drs. Morris Fishbein, Chicago, editor of THE JOURNAL; Charles H. Mayo, Rochester, president of the state public health association; J. Arthur Myers, professor of medicine and preventive medicine and public health, University of Minnesota School of Medicine, and Mr. Frederick E. Murphy, publisher of the Minneapolis *Tribune*. Dr. Oscar E. Locken, Crookston, was toastmaster.

Dr. Pottenger Gives Bell Lecture.—Dr. Francis M. Pottenger, Los Angeles, will deliver the John W. Bell Memorial Lecture of the Hennepin County Medical Society, Minneapolis, December 2, on "Diagnosis of Tuberculosis." This lectureship was established in 1934 by the Hennepin County Tuberculosis Society, in honor of the late Dr. Bell. The lecture is to be delivered at the December meeting each year of the county medical society. Dr. Bell, who died in 1933, was a member of the House of Delegates of the American Medical Association from 1919 to 1923. He also served as president of the Minnesota State Medical Association, Hennepin County Medical Society and the Minnesota Academy of Medicine, and was a member of the state senate from 1891 to 1895 (THE JOURNAL, Aug. 18, 1934, p. 496).

MISSISSIPPI

Society News.—Dr. Richard D. Sessions, Natchez, discussed "Pancreatic Cysts and Pancreatic Abscess" before the Adams County Medical Society in Natchez, recently.——Speakers before the Delta Medical Society in Moorhead, October 9, included Drs. Carl R. Crutchfield, Nashville, Tenn., on "Treatment of Fibroid Tumors" and William S. Taylor, Isola, "Comatose Malaria."——Dr. John H. Musser, New Orleans, addressed the Pike County Medical Society, October 5, on "Cholecystitis and Cholelithiasis."——Speakers before the Central Medical Society, Jackson, October 1, included Dr. Harvey F. Garrison Sr., Jackson, on "Purpura Haemorrhagica."——At a meeting of the Homochitto Valley Medical Society in Natchez, October 10, papers were presented by Drs. Jacob S. Ullman and Homer A. Whittington on "Menstruation and the Hormones" and "Essential Hypertension," respectively.——The Issaquena-Sharkey-Warren Counties Medical Society was addressed in Vicksburg, November 12, by Drs. Raymond H. Potts, New Orleans, Laurance J. Clark and William K. Purks, Vicksburg; they presented a symposium on rheumatic heart disease.——Speakers before the North Mississippi Medical Society in Oxford, October 18, included Dr. Otis S. Warr, Memphis, Tenn., on "Management of the Patient with Heart Failure."

MISSOURI

Conference on Social Hygiene.—The Missouri Social Hygiene Association, cooperating with the St. Louis Medical Society, held a conference, October 24, to afford employers and physicians opportunity to discuss social hygiene in its relation to industry. Dr. Richard S. Weiss, assistant professor of clinical dermatology, Washington University School of Medicine, talked on "Venereal Disease as a Problem for Industry"; Dr. Ben F. May, "Venereal Disease and the Community," and Dr. Paul J. Zentay, president of the social hygiene association, "What Can Be Done About It?"

Red Cross Medal to Mrs. Elsbeth Vaughan.—The International Committee of the Red Cross, Geneva, Switzerland, awarded the Nightingale Medal to Mrs. Elsbeth Vaughan, St. Louis, recently; the presentation will probably take place at the annual meeting of the board of incorporators, it was stated. Mrs. Vaughan is the widow of the late Dr. Victor C. Vaughan, Detroit. She has been associated with the American Red Cross since early in 1917 in this country and abroad and since 1924 as assistant director of Red Cross Nursing of the midwest branch office in St. Louis. During the World War she assisted with the organization of nurses for military service. In her present position, Mrs. Vaughan directs Red Cross nursing activities in seventeen states included in the area allocated to the midwest branch, according to Milwaukee *Medical Times*.

NEBRASKA

Society News.—The Seventh Councilor District Medical Society held its annual meeting in Harvard, October 17, with the following speakers, among others: Drs. John R. Nilsson, Omaha, "Operative Technic and After-Treatment, with End Results, in the Treatment of Severe Esophageal Stricture"; Robert D. Schrock, Omaha, "Fractures of the Tibia into the Knee Joint," and John F. Allen, Omaha, "Treatment of Minimal or Early Pulmonary Tuberculosis."——Dr. Leroy A. Calkins, Kansas City, Mo., addressed the Omaha-Douglas County Medical Society, October 9, on "Management of the Occipitoposterior Presentation." The society devoted its meeting of October 22 to dedication of the Omaha-Douglas County Central Health Service.——The Northwest Nebraska Medical Society, including the counties of Dawes, Sioux and Sheridan, was organized at Chadron, October 15.——Drs. John Marshall Neely and Clarence K. Elliott, Lincoln, addressed the Lancaster County Medical Society, October 1, on "The Value of Biopsy" and "Relation of Salts of Blood to Edema," respectively.

NEW YORK

Personal.—Dr. Charles E. Martin has been appointed medical director of Albany Hospital, Albany. He has been a member of the staff for several years.——Dr. John N. Hayes, Saranac Lake, has been appointed medical director of Sanatorium Gabriels, Gabriels.

Society News.—Drs. Rosco G. Leland, Chicago, director of the Bureau of Medical Economics, American Medical Association, and Frederic E. Elliott, Brooklyn, addressed the Medical Society of the County of Westchester, at White Plains, November 19, on medical economics in the nation and in the state, respectively.——Dr. Edward K. Cravener, Schenectady, addressed the Medical Society of Montgomery County at Amsterdam, October 30, on "Bone Atrophy Following Trivial Injuries and Its Compensation Angles." Dr. Harold Jackson Davis, Albany, director of medical care for the Temporary Emergency Relief Administration and consultant on medical care for the Works Progress Administration, spoke on aspects of these projects of interest to the practicing physician.

New York City

Hoeber Firm Affiliated with Harpers.—The medical publishing firm of Paul B. Hoeber, Inc., announces that it is now the Medical Book Department of Harper and Brothers, with offices at 49 East Thirty-Third Street.

Personal.—Dr. John N. Evans, Brooklyn, has been appointed professor of clinical ophthalmology at Long Island College of Medicine, Brooklyn.——A portrait of Dr. John M. Wheeler, head of the Institute of Ophthalmology, Columbia University—Presbyterian Hospital Medical Center, was recently hung in the institute as a tribute to Dr. Wheeler from his colleagues of the staff.——Dr. Edward Cathcart has resigned as associate dean of Columbia University College of Physicians and Surgeons to resume private practice in Detroit.

Society News.—A joint meeting of the Philadelphia Orthopedic Club and the section of orthopedic surgery of the New York Academy of Medicine was held at the academy, November 15; subjects discussed were scoliosis, equalization of the length of legs and recent developments in orthopedics. Among speakers were Drs. Kristian G. Hansson, Armitage Whitman, Philip D. Wilson, Charles Murray Gratz and George Anopol. A symposium on diabetes and pregnancy will be presented before the section of obstetrics and gynecology, November 26, by Drs. Elliott P. Joslin, Raymond S. Titus, Priscilla White and George V. Smith, and Mrs. O. Watkins Smith, all of Boston.——Dr. Geza Nemet addressed the New York Roentgen Society, November 18, on "Roentgen Diagnosis of the Heart and Great Vessels."——Drs. Borris A. Kornblith and Seaton Sailer will address the New York Pathological Society, November 26, on "Lymphogranuloma Venereum" and "Primary Sarcoma of the Breast," respectively.——Dr. Julius Lewis Amster addressed the American Society for Regional Anesthesia at the New York Academy of Medicine in October on "Spinal Anesthesia for Poor Pediatric Surgical Risks."

Death of Dr. Osborn.—Henry Fairfield Osborn, Sc.D., for many years president of the American Museum of Natural History, died suddenly November 6 of a heart attack at his home in Garrison, aged 78. Dr. Osborn was graduated from Princeton University and taught natural science there for several years. In 1890 he joined the faculty of Columbia University as professor of biology and from 1910 until his death was research professor of zoology. His connection with the American Museum began in 1891, when he was appointed curator of the department of vertebrate paleontology; he was made president in 1908. Among many other activities

Dr. Osborn served as vertebrate paleontologist to the U. S. Geological Survey from 1900 to 1924 and since that time had borne the title of senior geologist. He had served as president of many scientific organizations, among them the second International Congress of Eugenics and American Association for the Advancement of Science. In addition he was a member of numerous foreign societies and had received honorary degrees from universities both in the United States and abroad. In 1923 he received the gold medal of the Roosevelt Memorial Association and at various times was honored with other awards. He retired from the presidency of the museum in 1933 with the title of honorary president.

NORTH DAKOTA

New Members of State Board.—Drs. John E. Countryman, Grafton, Harry A. Brandes, Bismarck, and William H. Long, Fargo, were recently appointed members of the North Dakota State Board of Medical Examiners. Present officers of the board are Drs. William C. Fawcett, Starkweather, president, and George M. Williamson, Grand Forks, secretary-treasurer and general administrative officer.

OHIO

Dr. Houssay to Deliver Hanna Lecture.—Dr. Bernardo Alberto Houssay, professor of physiology, National University of Buenos Aires, Argentina, will deliver the thirty-sixth Hanna Lecture, December 3, at the Cleveland Institute of Pathology, on "The Hypophysis and Carbohydrate Metabolism."

Eugenics Research Prize.—Dr. Serge Androp of the staff of the Ohio Hospital for Epileptics, Gallipolis, has been awarded a prize of $3,000 offered by the Eugenics Research Association for original research on the "probability of commitment for a mental disorder of any kind, based on the individual's family history." The contest was announced in 1933.

Society News.—Dr. Virgil S. Counsellor, Rochester, Minn., addressed the Highland County Medical Society, Hillsboro, October 11, on diseases of the pelvis.——Drs. William W. Trostel, Piqua, and Emory R. Irvin, Bradford, addressed the Miami County Medical Society, Piqua, October 11, on obstetric care.——Dr. Howard T. Karsner, Cleveland, was guest speaker at a meeting of the Lorain County Medical Society, Lorain, October 9, on "Pathology of Bright's Disease."——Drs. Floyd C. Hendrickson, Canton, and George N. Wenger, Massillon, addressed the Stark County Medical Society, Canton, October 7, on "Vesical Neck Obstruction in the Female" and "Lumbar and Sacral Anesthesia in Perineal Surgery," respectively.——At a meeting of the Columbus Academy of Medicine, October 21, Dr. Donald E. Yochem, Newark, spoke on "Intercostal Nerve Blocking in the Treatment of Pulmonary Diseases."——Dr. John H. Warvel, Indianapolis, discussed "The Management of Diabetes" before the Montgomery County Medical Society in Dayton, November 15. Dr. Ralph W. Good, Cincinnati, will address the society, December 6, on "Indications for Splenectomy."——Dr. Henry L. Bockus, Philadelphia, was guest speaker at a meeting of the Union Medical Association (Sixth Councilor District) in Youngstown, November 19, on "The Rôle of Infection and of Disturbed Cholesterol Metabolism in the Genesis of Gallstones."

PENNSYLVANIA

Society News.—Dr. Sumner L. S. Koch, Chicago, addressed the Erie County Medical Society, Erie, November 6, on surgery of tendons and nerves and skin grafting.——Dr. Curtis C. Mechling, Pittsburgh, addressed the Cambria County Medical Society, Johnstown, November 14, on "Diagnosis and Office Treatment of Anorectal Disorders."

Philadelphia

Reunion of Resident Physicians.—The forty-ninth annual dinner of the Association of Ex-Resident and Resident Physicians of the Philadelphia General Hospital will be held at the Art Club, Philadelphia, December 3. The guest of honor will be Dr. Benjamin Franklin Stahl. Clinics will be given in the afternoon at the hospital by Drs. George E. Pfahler, Edward J. G. Beardsley, Daniel J. McCarthy, Kenneth M. Lynch, Philip Williams and David Riesman. Ex-interns are asked to send their correct addresses to Dr. George Wilson, 133 South Thirty-Sixth Street, Philadelphia.

SOUTH DAKOTA

Personal.—Dr. Gregory R. Waters, formerly of Chicago, was recently appointed resident physician for the Yankton Sioux Indians at Greenwood, S. D.——Dr. Edwin L. Perkins, Sioux Falls, has been appointed physician to the South Dakota penitentiary, succeeding the late Dr. William F. Keller.

TEXAS

District Meetings.—At the semiannual meeting of the Panhandle District Medical Society at Plainview, October 15-16, guest speakers included Drs. George D. Huff, San Diego, on "The Technic of Episiotomy"; Nelson M. Percy, Chicago, "Surgery of the Superior Hypogastric Plexus of the Sympathetic Nervous System"; Carroll M. Pounders, Oklahoma City, "Treatment of Pneumonia in Infants and Children," and Ray M. Balyeat, Oklahoma City, "Iodized Oil in Treatment of Intractable Asthma."——Speakers at a meeting of the Eleventh District Medical Society in Rusk, October 15, included Drs. George D. Mahon Jr., Dallas, on "Complications of Thyroid Surgery"; Joseph B. Foster, Houston, "Treatment of Fractures of the Lower Extremity," and Edward White, Dallas, "Urinary Calculi."——At the thirtieth annual meeting of the Fourth District Medical Society in Brady, October 23-24, speakers included Drs. Earl B. Ritchie, San Antonio, on "Ringworm Infection of the Skin"; Eugene V. Powell, Temple, "Results of Roentgen Therapy of Carbuncles and Other Infectious Reactions"; Dewey Sutton, San Angelo, "Mesenteric Vascular Occlusion," and James Shirley Sweeney, Dallas, "Juvenile and Adult Diabetes."

WASHINGTON

Health at Spokane.—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a population of 37 million, for the week ended November 9, indicate that the highest mortality rate (20.4) appears for Spokane; the rate for the group of cities as a whole was 10.8. The mortality rate for Spokane for the corresponding week of 1934 was 14.6 and for the group of cities, 11.1. The annual rate for the eighty-six cities was 11.3 for the forty-five weeks of 1935 and the same rate appeared for the corresponding period of last year. Caution should be used in interpretation of these weekly figures, as they fluctuate widely. The fact that a city is a hospital center for a large area or that it has a large Negro population may tend to increase the death rate.

WEST VIRGINIA

Professor Appointed.—Dr. Simon B. Chandler, associate professor of anatomy at Loyola University School of Medicine, Chicago, has been appointed professor and head of the department of anatomy at the University of West Virginia School of Medicine. Dr. Chandler, who graduated in medicine at Northwestern University School of Medicine, Chicago, in 1927, taught anatomy at the University of Arkansas School of Medicine, 1922-1924, and became associated with Loyola as assistant professor in 1926.

WISCONSIN

Fund for Research.—A fund of $7,800 has been donated to the University of Wisconsin School of Medicine, Madison, by E. R. Squibb and Sons Company, New York, for research on cyclopropane. The work will be under the direction of Dr. Ralph M. Waters, professor of anesthesia.

Appointments at Marquette University.—New appointments to the faculty of Marquette University School of Medicine, Milwaukee, for the current year include Drs. John E. Mulsow, assistant clinical professor of laryngology, otology and rhinology; Armand J. Quick, assistant professor of pharmacology; Forrester Raine and Eugene A. Smith, assistant clinical professors of surgery. Mr. Theodore Wiprud, executive secretary of the Medical Society of Milwaukee County, has been appointed lecturer in medical economics.

Society News.—Drs. Eben J. Carey and Francis D. Murphy, Milwaukee, were speakers at the annual meeting of the first councilor district of the State Medical Society of Wisconsin in Watertown, October 24, on "Anatomy and Physiology of the Heart" and "Diagnosis and Management of Heart Disease," respectively. Dr. Carey also delivered an address at an evening banquet on "Social and Economic Aspects of Medical Education Today."——Dr. Robert E. Burns, Madison, addressed the Rock County Medical Society, Janesville, October 29, on "Orthopedic Cases of Interest to the General Practitioner."——Guest speakers at the annual meeting of the tenth councilor district in Eau Claire in October were Drs. Henry E. Michelson, Minneapolis, on diseases of the skin; Francis D. Murphy, Milwaukee, diagnosis and treatment of acute nephritis, and Harry B. Zimmermann, St. Paul, tumors of the breast.——Dr. Rock Sleyster, Wauwatosa, addressed the Waupaca County Medical Society in New London recently on "The Patient with Chronic Complaints."——Drs. Louis M. Warfield, Milwaukee, and Chester M. Kurtz, Madison, addressed the Medical Society of Milwaukee County, Milwaukee, November 8, on "Treatment of Heart Failure" and "Treatment of Peripheral

Circulatory Failure," respectively. Dr. William C. MacCarty, Rochester, Minn., gave the opening lecture in the society's current graduate course in gastro-enterology, November 4. Other lecturers in the series are Drs. Ralph C. Brown, Chicago, Lewis G. Cole, New York, and Frank H. Lahey, Boston.

PUERTO RICO

Annual Medical Meeting.—The Puerto Rico Medical Association will hold its annual meeting at the association's building in Santurce, December 13-15. Dr. Esteban Garcia Cabrera, San Juan, is president of the association and Dr. Euripides Silva, San Juan, secretary. Members of the American Medical Association are invited to attend.

GENERAL

Society News.—Dr. Titus H. Harris, Galveston, was chosen president of the Central Neuropsychiatric Association at its fourteenth annual meeting in Topeka, Kan., October 25-26. Other officers elected are Drs. Benjamin Landis Elliott, Kansas City, Mo., vice president, and Henry W. F. Woltman, Rochester, Minn., secretary.

New Pharmacopeia Ready in December.—The Eleventh Revision of the U. S. Pharmacopeia will be available December 16, according to an announcement by the board of trustees of the U. S. Pharmacopeial Convention. Standards in the new revision will become effective June 1, 1936, superseding the tenth revision. Fifty-eight new substances have been added in the new revision.

Warning Against Impostor.—Dr. Eugene C. Hood, medical superintendent of the Florence-Darlington Tuberculosis Sanatorium, Florence, S. C., reports that a woman giving the name of Karr and her address as Cleveland recently cashed checks in Florence stores, using the sanatorium falsely as a reference. In each case she told the merchants that she had been to the sanatorium to sell dairy equipment or that the institution "was a prospect for dairy equipment." As the sanatorium has no dairy, Dr. Hood said, it has no need for dairy equipment. It is believed that the woman may impose on other hospitals in the same manner.

Change in Status of Licensure.—The New York State Board of Medical Examiners reports the following action:

Dr. Samuel Taylor Barton, Canastota, license suspended for one year, March 15, on the basis of his having committed an abortion.

The California State Board of Medical Examiners reports the following action taken at a meeting in Sacramento, October 22:

Dr. Fred M. Bantum, Los Angeles, found guilty and placed on probation for five years, during which time he shall not have or apply for a federal narcotic permit or have narcotics in his possession and he shall report at each annual Los Angeles meeting.

Dr. Leonard R. Chapman, Los Angeles, license revoked; found guilty of aiding and abetting an unlicensed practitioner.

Dr. Averell H. Owen, license restored and placed on probation for five years, with the requirement that he report at each annual Los Angeles meeting.

Dr. Eugene L. Settles, formerly of San Diego, license restored and placed on five years' probation without narcotic privilges.

Dr. Arthur M. Tweedie, Los Angeles, found guilty and placed on probation for five years during which time he shall not have or apply for a federal narcotic permit or have narcotics in his possession and ordered to report at each annual Los Angeles meeting.

The Michigan State Board of Registration in Medicine reports the following action taken at a meeting in Lansing, October 9:

Dr. Alice G. Vinton, formerly of Grand Rapids, license revoked on conviction of abortion.

The Texas State Board of Medical Examiners has recently reported the following action taken at the June meeting:

Licenses of Drs. William Everett Wright, San Antonio, Lem Faulk, Sulphur Springs, and T. K. Jones, Henrietta, revoked because of narcotic addiction.

License of Dr. Joseph Clifford Jones, Spearman, revoked through district court because of fraud in obtaining it.

Four Companies Agree to Abandon Unfair Advertising.—Four companies dealing in medicinal preparations have entered into stipulations with the Federal Trade Commission to abandon certain unfair advertising practices. These companies are the Koskott Company, New York; Carleton & Hovey Company, Lowell, Mass.; Smith Brothers, Inc., Poughkeepsie, N. Y., and Dr. Louis L. Sherman of Oakland, Calif., operating as "Clinic of the Air." The commission reports that the Koskott Company, which sells preparations for treatment of the hair and scalp and for coloring the hair, agrees to stop representing that any of its preparations is an effective treatment for thinning or falling hair, or that their use will prevent hair from falling or being brushed or combed from the head, unless the advertising assertion is limited in reference to excessive thinning and excessive falling of the hair. Other similar representations will be discontinued.

The Carleton & Hovey Company, distributors of "Father John's Medicine," agrees to stop representing it as an effective therapeutic remedy for colds, coughs or throat troubles, it being understood that this agreement will not prevent the respondent from advertising the preparation as a treatment for colds, coughs due to colds or minor throat troubles. Father John's Medicine also will not be represented as effective in the treatment of colds, except by providing the beneficial effects of vitamin A. Other representations will be discontinued.

Smith Brothers, Inc., selling Smith Brothers' Cough Syrup and Smith Brothers' Cough Drops, stipulates that it will cease advertising the drops or the cough syrup as effective remedies for the treatment of colds or that either preparation has a unique advantage over other remedies due to vitamin A content.

Dr. Louis L. Sherman, operating as "Clinic of the Air" and dealing in a list of preparations including "Liquid Ferrolax," "Calwhey" and "Red Label Enterol," agrees to cease advertising that these preparations or any combination of them constitute a competent treatment or effective remedy for any of a list of twenty-eight diseases ranging from acidosis, anemia and biliousness to rheumatism, spastic colon and tuberculosis. The respondent agrees also not to represent "Calwhey" as raising resistance or as assisting in eliminating poisons through the kidneys, and to cease asserting that by hundreds of tests Calwhey is known to be effective in changing the intestinal flora. Numerous other representations of these preparations will be discontinued, according to the stipulation.

Government Services

Thirty-One States Free from Bovine Tuberculosis

Massachusetts, South Carolina, Georgia, Alabama and Louisiana have recently been designated as modified accredited areas by the U. S. Department of Agriculture, signifying that they are practically free from tuberculosis of cattle. Federal funds were used in the testing that achieved this result. Thirty-one states are now accredited areas. Some retesting will be necessary, but the most difficult part of the eradication of tuberculosis in these areas has been completed, officials said.

New Naval Medical Center

A new naval medical center to function as a medical diagnostic and educational center under the control of the bureau of medicine and surgery has been established under a recent general order reported in the November *Military Surgeon*. The budget bureau will be asked to approve the expenditure of about $3,200,000 for construction of a new naval hospital. If the appropriation is approved, work will commence about July 1. Capt. Ulysses R. Webb has been ordered detached from command of the dispensary at the navy department to command the medical center, which replaces the naval hospital and naval medical school administration set-up.

Government Positions for Physicians

The U. S. Civil Service Commission announces open competitive examinations for two positions in the Children's Bureau, Department of Labor, and one in the Indian Service. Applications are invited for the positions of director of the division of maternal and child health and director of the crippled children's division in the Children's Bureau, each at a salary of $6,500 a year. Applicants must have been graduated from recognized medical schools and in addition must have had certain specified experience. In the Indian Service the position is principal medical officer with a salary of $5,600 a year. Applicants must have been graduated from recognized medical schools and must be licensed to practice in some state or the District of Columbia. In addition they must have had not less than five years' experience in the vaccination of new-born infants with bacillin Calmette-Guérin vaccine according to the method of Calmette. They must also have had not less than three years' experience in city, state or federal public health laboratories with work in tuberculosis. The two types of experience may run concurrently. Applications for all three positions must be filed not later than December 9. Full information may be obtained from the commission at Washington or from the secretary of the U. S. Civil Service Board of Examiners at the postoffice or customhouse in any city that has a postoffice of the first or second class.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Oct. 26, 1935.

Reduction of the Noise of Vehicles

The campaign against noise, mainly traffic noise, and the formation of the Anti-Noise League have been described in previous letters. The government has been induced to take action by prohibiting the use of motor horns in cities at certain hours. But it has not stopped at this. The Ministry of Transport has appointed a committee to investigate the noise of road vehicles. It has measured the volume of noise made by motorcycles on the road. This foreshadows the time when every vehicle must comply with a certain maximum of measured noise. A new unit of noise, the phon, has been introduced. The noise of a subway train, with the windows open, has been measured at between 90 and 95 phons, which is the greatest noise that a car will be allowed to make in the future, if the committee's recommendations are adopted. The sound of a loud motor horn is represented by from 100 to 105 phons, of a pneumatic drill by 105 to 110 phons and of an airplane engine by 110 to 120. The greatest noise which the human ear can bear without pain is stated to be 130 phons. The adoption of this system of noise measurement and of a legal maximum noise for cars would be a considerable advance on the measures which the Ministry of Transport has taken to secure quieter streets, such as the enforcement of the use of pneumatic tires and the creation of silent zones. It has been hampered in the attempt to rid the roads of noisy vehicles by the fact that the "excessive noise," which is an offense, could not be measured but had to be left to individuals to decide what constituted this nuisance.

Acoustic tests were carried out by the committee on new vehicles with a noise meter designed to simulate the behavior of the human ear. The experiments showed that, while in general private automobiles made little noise, commercial vehicles were less satisfactory and motorcycles still more unsatisfactory. Tests with stationary vehicles showed that exhaust silencing of many motorcycles was unsatisfactory, while that of ordinary cars was satisfactory. Except at high speeds the ordinary automobile is not unduly noisy, but a number of sports cars are. Except at moderate speeds many motorcycles are too noisy. The committee has made the following recommendations. 1. When a vehicle is driven with full throttle at 30 miles an hour (or the maximum legal speed if that is less than 30), the loudness measured at a point 18 inches to one side of the vehicle shall not exceed 90 phons. 2. When the vehicle is stationary with the engine running at the speed that would give maximum power output, the loudness 18 inches behind the exhaust pipe shall not exceed 95 phons. The committee will continue its work under the chairmanship of Dr. G. W. C. Kaye. Among other matters that it is investigating is the noise made by the present type of motor horns.

The Training of Opticians

At the congress of the British Optical Association at Oxford Dr. Pistor, director of the Jena School of Optics, said that there was no longer room for the spectacle dealer who knew nothing about optics. The aim of the International League of Opticians was to raise the standard of the optical calling throughout the world. No one should be permitted any longer to style himself "optician" unless he had qualified by adequate study and training. He should at least be able to produce spectacles to conform to a given prescription and to make a frame according to prescribed measurements. He submitted the following schedule for the qualified optician's training: 1. Three years' technical training under a qualified optician in his workshop and showroom with technical examination. 2. Attendance at a school of opticians for supplementing his knowledge and for learning sight testing and prescription work, with a state-controlled examination at the end of the course. Professor Ronchi, director of the Royal National Institute of Opticians, Florence, said that Italy presented a paradoxical situation. Those who wanted to become opticians were compelled to pass an examination, and yet no schools had been provided where the necessary knowledge may be acquired.

The Fight Against Leprosy

At the conference of the mission to lepers held in London, Dr. Ernest Muir, medical secretary of the British Empire Leprosy Association, spoke of the antileprosy work in India. He said that, just as the home of tuberculosis was the great industrial towns, so the home of leprosy was the villages. Doctors and nurses might keep on for centuries treating those who attended the leprosy homes and dispensaries, but the disease would never tend to diminish, because its real source would remain in the villages. They must get into the villages. In Indian villages such work was proving wonderfully successful. The people were beginning to realize what the danger of leprosy is and what had to be done to prevent it. Dr. N. D. Fraser of the English Presbyterian Mission at Swatow, South China, spoke of his work in establishing outpatient leprosy clinics in country districts. In the Swatow district there were at least 10,000 lepers.

CONSULTANT SERVICES IN MUNICIPAL HOSPITALS

The municipal hospitals are maintained by the local authorities. Poor persons are entitled to free treatment, while those who can afford to pay something are assessed according to their means. The medical staff is a whole time one and of course is salaried. The medical staff of the voluntary hospitals, with the exception of the residents, who are all junior men, is not paid. Their recompense consists in the superior status conferred, which gives them consultant rank. But the municipal hospitals also appoint consultants and specialists for part time work, for which they are paid. As their whole time staff consists of men appointed for life, many of them are experienced physicians and surgeons, and the consultants and specialists are used for cases presenting special difficulties. The Manchester city council has made a new departure in the three large municipal hospitals, which together have 3,500 beds. At present twenty-six consultants have been appointed at a cost of $22,500 per annum. They visit the hospitals once or twice a week. A new arrangement has been made which will cost $62,500 per annum. The present system is held to be defective in that the patient is accorded specialist attention only when in the judgment of the medical officer in charge of the case a consultation is considered to be indicated. This is held to be wrong, because in the voluntary hospitals the visiting physicians and surgeons are responsible for the diagnosis and treatment of the cases and every patient is seen by a consultant soon after admission. The new scheme provides for increased frequency of the visits of consultants, who will be personally in charge of all the acute cases in the hospital. There will also be the closest collaboration between the municipal hospitals and the voluntary ones.

The appointment of consultants from the honorary staffs of the voluntary hospitals as a visiting staff to the municipal hospitals is not new, but giving them such increased responsibility and control is an innovation. The municipal hospitals at one time were little more than asylums for the aged and infirm poor. Now their scope is as wide as that of the voluntary hospitals and includes even the treatment of accidents. Some fears are entertained that they may supplant the voluntary hospitals. These used to be entirely supported by the voluntary subscriptions of the charitable, for the benefit of the poor. Now a charge is made according to the circumstances of the patient unless he is indigent. But this usually does not do more than

cover part of his cost to the hospital, so that subscriptions are still necessary. But with a complete hospital service now provided out of the public funds, the subscribers to the voluntary hospitals may decide that they are no longer necessary, especially in these times of excessive taxation, part of which is devoted to the support of the municipal hospitals. Here is another step in the socialization of medicine.

PARIS

(From Our Regular Correspondent)

Oct. 18, 1935.

The Fourth French Gynecologic Congress

The fourth Gynecologic Congress was held at the Salies-de-Bearn thermal springs, June 8-10. It is the custom at a French medical congress to submit exhaustive surveys of the different aspects of one or two topics of current interest. The subjects and essayists are selected by vote at the preceding annual congress, so that the literature can be thoroughly reviewed and the personal experience of those selected to make the reports added. The subject chosen for this year's congress was "Genital Hemorrhages Exclusive of Those Incident to Pregnancy and Neoplasms."

The first paper was by L. and R. Dieulafé of Toulouse on the "Vascularization of the Female Genital Tract." The authors' research has shown that a free anastomosis exists between the uterine and ovarian arteries. The intra-uterine anastomoses in the body of the uterus extend only to the midline. There is a rich anastomosis of the veins arising from the vagina, uterus, tubes and ovaries. There are but few valves in the veins. The latter anatomic condition and the free anastomoses between the veins explain the gravity of puerperal and postoperative thrombosis of the ovarian and uterine veins. In the uterine wall the veins begin as immense lacunae without evident intervascular spaces.

Paul Ulrich of Paris read a paper on "Genital Hemorrhages of Local Origin." Uterine hemorrhages can be grouped as menorrhagias and metrorrhagia. The term menometrorrhagia was proposed for cases in which one can no longer distinguish a menorrhagia and a metrorrhagia.

The ovary plays the principal part in endocrine disturbances of the female genitalia, it being understood that this organ in turn is under the control of other glands of internal secretion. Of the latter, in the order of their importance, the hypophysis may be mentioned, then the thyroid, the islands of Langerhans and the adrenals.

The ovary elaborates the follicular hormone and the corpus luteum hormone. Ulrich is of the opinion, contrary to that of most authors, that there is no marked antagonism in the action of these two hormones. The corpus luteum hormone (progestin) is really complementary in its action to the follicular (estrogenic) hormone. The two hormones are so closely related from a physiologic and chemical standpoint that it seems difficult to conceive of a marked antagonistic action between the two. The term essential hemorrhagic metritis, as suggested recently by some for the menometrorrhagias of ovarian origin, ought to be dropped in favor of a division of such hemorrhages into (1) those in which there is a deficiency of the follicular factor, (2) those in which there is a hypersecretion of this principle, in which case the secretion of the corpus luteum is deficient, and (3) those in which there is a hypersecretion of progestin. Douay and Champy have described the last group as "deciduoform hemorrhagic metritis."

In the discussion, Douay of Paris stated that his studies show that the abnormal persistence of the corpus luteum is accompanied by a hypertrophy and marked hyperemia of the uterine mucosa and an abnormal development of decidual cells just as if a pregnancy existed. In the hypertrophic form of metritis due to a follicular hypersecretion, the determining cause is the persistence of a follicular cyst. The menstrual period is delayed and then hemorrhages appear. The scrapings reveal a thick mucosa much less vascular than in cases of deciduoform metritis. In these cases the real lesion may be in the ovary or in the hypophysis. According to Douay the hypersecretion of the follicle stimulating, gonadotropic hormone is the cause of hypertrophic metritis of the second type described, while excessive secretion of the luteinizing hormone results in the deciduoform type of metritis.

Francillon-Lobre and Dalsace of Paris advocated the preliminary use of hysterosalpingography in obscure cases of metrorrhagia instead of blindly curetting every patient.

UTERINE HEMORRHAGES DUE TO SYSTEMIC BLOOD CONDITIONS

Emile-Weil and Isch-Wall of Paris read a paper on uterine hemorrhages due to systemic blood conditions. The blood dyscrasia which is found constantly in the course of uterine hemorrhages without local lesions is hemogenesis, the stigmas of which can be quite evident or obscure (fruste). The classic hemogenesis diathesis is characterized either by purpura or by hemorrhages from mucous membranes. The metrorrhagias observed before puberty are an example of the second type. The same is true of the menorrhagias and metrorrhagias of young girls, if local lesions can be eliminated. These include not only anomalies of excessive menstruation but also anomalies of rhythm, such as hemorrhage every fifteen days or a menorrhagia on the thirty-fifth day. The phenomenon known as hemotrypsia is characteristic for hemogenesis. One sees a primary hemorrhage followed by others in more remote parts of the body. The menstrual hemorrhage can represent the primary one and be followed by others elsewhere. Control of such a primary hemorrhage is followed by cessation of the other hemorrhages. The evolution of a hemogenesis is characterized by alternate periods of cessation and recurrence in the form of attacks, which are dependent on various causes such as puberty, pregnancy, the menopause or various infections or intoxications. Every metrorrhagia should be investigated as to hepatic and endocrine disturbances and a search made for a possible hereditary syphilis.

The clinical forms of hemogenesis that are of particular interest are the metrorrhagias of a latent hemogenesis (form fruste), the diagnosis involving a search for the minor stigmas and the localized hemogenesis of the uterus, the constant recurrence and resistance of which to all treatment should arouse a suspicion of a systemic etiology. One must look for evidences of hepatic, splenic, medullary (bone marrow) or endocrine dysfunction to explain these metrorrhagias. The latter when accompanied by hirsutism or evidences of virility should lead one to suspect adrenal or hypophyseal dysfunction.

Treatment of Pyloric Stenosis of Infancy

At the April 9 meeting of the Pediatric Society of Eastern France, Rohmer of Strasbourg reported seventy-seven cases. There were eight deaths, but four of the patients were operated on too late; i. e., after failure of medical treatment. Of thirty-four infants operated on under favorable conditions four died, one each of operative shock, bronchopneumonia, peritonitis due to faulty technic, and incomplete division of the hypertrophied muscle fibers. In the forty-one cases in which operation was not performed there were also eight deaths, but here also four should be excluded because the infants were moribund when admitted to the hospital. Hence there were four deaths following medical treatment. The results of the two methods of treatment are about equal. Twelve of the patients who were operated on had been treated medically without success. In order to counteract the effects of the operation, sodium chloride solution in large amounts has been found to be efficacious. This rechloridation method is greatly in favor in France at present,

in postoperative treatment. Feeding can be begun within a few hours after operations for pyloric stenosis in infants. It is exceptional to find that vomiting persists during the first few days after operation. As to medical treatment, frequent feedings in small quatities, preferably with mother's milk as a base and plenty of water, are the chief features. If the vomiting continues after several weeks of medical treatment, immediate operative intervention is indicated. If one operates without waiting for the results of medical treatment, the mother may continue to nurse the infant.

Rohmer is of the opinion that the potential complications of medical treatment are by far more serious than the risks of operation. In mild cases one may try medical treatment, but in the more severe cases an operation should be performed as soon as possible. These more severe cases show, on radiographic examination, retention of the opaque medium over a period of several hours.

A second paper on medical treatment was read at the same meeting by Vonderweidt and Jullien of Mulhouse. They maintain that even severe cases can be cured by nonoperative treatment. Some may assert that these are simply cases of pylorospasm. The differential diagnosis of the latter from a hypertrophic pyloric stenosis is not easy and they doubt whether a hard and fast line can be drawn between the two conditions, as there is a marked element of spasm in true hypertrophic pyloric stenosis. When incoercible vomiting, long after taking food and even just preceding feedings, visible peristalsis and a palpable tumor are present, the diagnosis of hypertrophic stenosis is certain.

The medical treatment aims to combat the faulty nutrition, the pylorospasm and the diminution in blood chlorides. Preference is given to breast milk. If this is not feasible, milk powder or cow's milk coagulated with a special ferment is given, as well as carbohydrates with plenty of sugar. The infant should be fed every two hours and in small quantities. Salt is added to each feeding to counteract the chloropenia. Dextrose solution by the drip method is given by rectum, about 50 cc. from four to six times in twenty-four hours. For the pylorospasm a drop of a 1:1,000 solution of atropine sulphate is given with each feeding. The excessive gastric peristalsis is greatly relieved by hot applications. If the vomitus contains much acid material, gastric lavage is done, once daily, with a mild alkaline solution. Of twenty-eight cases thus treated, twenty-three were cured. Three of the five deaths occurred before 1930. Since 1931, when salt was added to the feeding, eighteen cases have been cured and there were only two deaths. In both of the latter the infants were markedly cachectic when first seen.

In the discussion, Bindscheidler of Strasbourg emphasized the importance of adding sodium chloride to make up for the loss of chlorides.

Exophthalmos in Acromegaly

Exophthalmos is a symptom of certain diseases of the hypophysis and is seen especially in cases of acromegaly, according to Marcel Labbé and Justin-Besançon, who reported such a case at the July 5 meeting of the Société médicale des hôpitaux. The protrusion of the eyeballs resembles completely that seen in severe hyperthyroidism. In their case this symptom appeared three years before the first skeletal evidences of acromegaly; hence in the early stages of the latter the exophthalmos may be readily thought to be of thyroid origin. In the later stages of acromegaly the protrusion of the eyeballs can be masked by changes in the bones surrounding the eye. Experimentally, the exophthalmos observed in acromegaly can be reproduced by injection into guinea-pigs of the acid portions of the anterior hypophyseal lobe. Exophthalmos follows injection of anterior pituitary into thyroidectomized animals.

In the discussion, Azerad called attention to his paper on the difficulties of differential diagnosis between exophthalmic goiter and acromegaly. A goiter may be one of the first observations in acromegaly. If the goiter is associated with a rise in the metabolic rate, an erroneous diagnosis of hyperthyroidism may be made.

Staphylococcus Anatoxin in Treatment of Sepsis

A man, aged 25, who had an infection of a relatively minor wound, became seriously ill. A high temperature, jaundice, osteomyelitis of the tibia and the jaw, and a pulmonary abscess, in the pus of which Staphylococcus aureus was found, appeared within a short time. At the July 5 meeting of the Société médicale des hôpitaux, Robert Debré and his associates reported such a case. The blood culture was positive for the organism and on account of the rapid increase in the signs of a pyemia the prognosis became decidedly unfavorable; 160 cc. of an antistaphylococcus serum prepared by Ramon at the Pasteur Institute was injected without any appreciable improvement. Then the injection of a staphylococcus anatoxin, also prepared by Ramon, was begun. Four doses were given over a period of six weeks. The amounts employed were respectively 0.75, 1.5, 3 and 4 cc. A marked improvement in the general condition was noted after the third injection, but an empyema containing the same organism developed, which required drainage. Nevertheless, the patient recovered.

The authors call attention to the fact that the examination of the blood showed a constantly higher content of staphylococcus antitoxin following the injections of anatoxin. This is confirmed by the observations clinically and in animals of a marked antitoxic immunization following the injection of staphylococcus anatoxin. This antitoxic immunity is accompanied by an antimicrobic immunity in animals. An antitoxic vaccination and an equally efficacious antitoxic serotherapy can now be achieved in staphylococcus pyemia.

Surgical Treatment of Pulmonary Tuberculosis

The surgical treatment of pulmonary tuberculosis was the subject of a number of papers read at the eighth National Tuberculosis Congress, held at Marseilles in April. The first paper was by Leuret and Caussimon of Bordeaux on the "Indications and Results of Extrapleural Thoracoplasty." Every center in which pulmonary tuberculosis is being treated should have a surgical service in which thoracoplasty can be performed. An effort should be made to avoid extensive operations for relatively slight lesions. The chief aim should be to adapt the plastic operations to the subjacent foci; in other words, to collapse the bony thorax only where locally indicated. The use of radiography and injections of iodized oil is the best guide as to how much one can accomplish by resection. As an anesthetic, tribrom-ethanol with the addition of small amounts of ethyl chloride, seems to be the best agent. Even with every possible precaution, thoracoplasty must still be considered a serious procedure. Of ninety-one personal cases, 80 per cent were benefited. Of this number, 40 per cent may be considered as clinical cures. In 20 per cent of the ninety-one cases the result was a failure. The following cases call for operation: (*a*) those in which pneumothorax is indicated but is impossible owing to obliteration of the pleural space by adhesions; (*b*) cases in which a pneumothorax has been done but is unsuccessful because of a pleurisy, which either follows the pneumothorax or occurs spontaneously or in which an intercurrent infection leads to a recrudescence of the tuberculous involvement of the collapsed lung.

The important chapter in thoracoplasty is formed by adherent apical lesions; that is, cavities which are inactive with little secretion. Large cavities due to active lesions and necessitating extensive resections are a contraindication to operation. Such cavities can be treated by thoracoplasty after good drainage has been provided for as a preparatory measure. Tuberculous pleurisy with fistula formation is an unwelcome clinical entity and one should not wait too long before attempting a thoraco-

plasty lest the greatly thickened pleura endanger the success of operative intervention. A thoracoplasty should be done only after treatment at a sanatorium and only in patients who do not have dyspnea on exertion and permanent tachycardia. Preliminary phrenicectomy is not indicated.

Maurer and Rolland of Paris in their paper on the same subject stated that the principal indication for artificial pneumothorax is a recent bronchopneumonia of tuberculous origin. It is dangerous to continue to employ the method if it is not successful in loosening up adherent bands between the two layers of the pleura. In such cases phrenicectomy or, better still, a thoracoplasty should be done. The former should be performed only if there is much chance of its being a success. A phrenicectomy should not be considered as a necessary preliminary to a thoracoplasty. As to results, these varied according to whether the thoracoplasty had been performed in sanatoriums or in private and public (Paris) hospitals. The mortality in 278 thoracoplasties was only 0.78 per cent.

Professor Guéniot Dies at Age of Nearly 103

An eminent obstetrician of Paris, Professor Guéniot, has passed away at the age of 102 years and 8 months. His hundredth birthday was celebrated at a special meeting of the Academy of Medicine, of which he was elected a fellow in 1880 and president in 1905. He was active until a short time ago and engaged in writing his memoirs. In announcing the death of Professor Guéniot, Sireday, the president of the Academy of Medicine, described the excellent work of the deceased in his specialty, obstetrics, and his noble character, which made Guéniot a worthy representative of the tradition of medical honor in the highest interpretation of the term.

BERLIN

(From Our Regular Correspondent)

Sept. 30, 1935.

Incidence of Venereal Diseases and Prostitution

The federal census of venereal patients, taken in 1934, reveals, on the basis of replies to questionnaires sent to physicians and institutions, that in the civilian population there were 12,499 male and 6,587 female patients who received their first treatment during the month in which the census was taken. Hence the annual number of new venereal patients may be placed at 225,000, as compared with 370,000 in the last census year (1927). Therefore, the new cases of venereal disease in 1934 included 47 males and 23 females to each 10,000 of population. There were about 10,000 new cases of gonorrhea and 4,000 new cases of syphilis. The number of new cases of gonorrhea in men was almost three times as great as the number reported in women. About sixty men and a like number of women reported to a physician, during the census month, by reason of two venereal diseases, while one man had a triple involvement. About one third of the patients, during the census month, sought medical aid of a general practitioner; more than 50 per cent consulted specialists, and about one sixth were admitted to hospitals. The decline in the number of new cases, as compared with 1927, is reflected in all the morbid types. In general, there was an earlier beginning of treatment in gonorrhea, which is gratifying, although the number of cases not treated until the chronic stage was reached (especially in women, 18 per cent) is still much too high. Of importance is the early detection of syphilis, particularly among the juveniles, since in that group, and, to some extent, also among the older men, contagion appears to have increased. If 225,000 persons are treated for venereal disease annually in Germany, it is evident that of 100 male persons between the ages 15 and 49 about twenty-five are treated by a physician, by reason of venereal disease; the percentage of women so treated is about 12. In the larger cities the danger of infection is often more than twice as great as in the smaller towns.

Interesting observations on the medical supervision of prostitution have been published by Dr. Morschhäuser of Cologne. The number of prostitutes regularly supervised by the Cologne board of health is twice as large as formerly, during the period of regimentation, and ranges around 1,200. In recent years the number of voluntary requests for registration has greatly increased. In Cologne the supervision of prostitutes is effected by means of a system that deals with the problem in an individual manner. There are no general provisions with regard to the frequency with which prostitutes must be examined; the intervals range from one to fourteen days, depending on individual conditions. During the beginning period of control, the homes of newly registered prostitutes are inspected, in order to determine their hygienic condition. This system of supervision, carried out on the basis of individual needs, has a salutary effect on the general conduct of the women, as they want to be classed in a higher group, with longer intervals between the stated examinations. Also with respect to women who are regularly examined by a special physician, every fourth examination must be made at the headquarters of the board of health. It is an established principle that these women shall not be given a certificate as to their condition of health. The cards issued by the board of health contain the words "No guaranty as to condition of health." Nor are specialists permitted to supply any attest designed to strengthen the evidence furnished by the card issued by the board of health. If any such woman is found on examination to have an infectious venereal disease, it is mandatory that she be sent at once under proper escort to a suitable hospital for treatment.

For the purpose of facilitating search for sources of infection, the board of health has created at headquarters the following special filing cabinets: (1) a complete list of the names of all registered prostitutes, together with photographs; (2) a list of prostitutes arranged according to streets; (3) a list of all the nicknames and pet-names by which prostitutes are known, and (4) a list of all the persons who have become known to the board of health in any connection. These files prove valuable if the infected person cannot give any details concerning the person in question. If a prostitute is discovered to be a source of infection, she is immediately escorted from her home by a special official, in order to prevent further contagion and any possibility of her escaping to another city. In the case of infected children, special care is taken to discover the source of the infection. Venereal persons dismissed from a penal institution are taken directly to a hospital, if they have no fixed abode or are known to be asocial and unreliable.

Dr. Schoen of Berlin has published statistics on the combating of venereal diseases in connection with disability insurance. In 1933, 11,480 requests for treatment of insured persons and members of their families were received, and about 85 per cent of the requests were granted. Treatment was given to 9,109 insured persons (1930, 30,614), 6,741 of whom were men (1930, 20,534). Syphilis patients numbered 4,212, gonorrhea patients 3,712; 109 patients were infected with both diseases. The number hospitalized was 1,154 (686 men, 468 women). Of 8,684 persons treated, a complete cure was effected in 8,513, or 98 per cent. Among the patients there were 1,849 married men and 577 married women. The average cost of treatment for a hospitalized person was 189 marks ($75); in 1930 the average cost of treatment was much higher (242 marks, or $97). The average cost of ambulant treatment was 52 marks ($20); in 1930, 78 marks ($31). The total expenditures for individual treatment amounted to 635,000 marks ($250,000); in 1930, 3,100,000 marks ($1,240,000). In 1933 the financial situation affected disability insurance to such an extent that it was found difficult to measure up to former performances with regard to the treatment of patients with venereal disease, but care was taken not to cripple the functioning of the consultation centers. Welfare work among noninsured venereal patients was

restricted to 454 persons, whereas, in 1930, 5,663 persons who were uninsured were given treatment. The total expenditures for the consultation centers (which were able to keep expenses down by utilizing in some instances the consultation centers of other organizations) amounted to about 880,000 marks ($350,000), as compared with 1,900,000 marks ($760,000) in 1930.

The Deutsche Gesellschaft zur Bekämpfung der Geschlechtskrankheiten published an officially approved leaflet for distribution by physicians among venereal patients, in accordance with legal provisions pertaining thereto. During the past six years a total of 650,000 of these leaflets has been distributed. It is apparent, therefore, that only about 36.5 per cent of the persons receiving first treatment for a venereal infection were given this official leaflet.

MADRID

(From Our Regular Correspondent)

Oct. 11, 1935.

International Congress of the History of Medicine

The tenth International Congress of the History of Medicine, organized by a committee of which Dr. Javier Cortezo was chairman, was held in Madrid, September 22-28. Dr. Gregorio Marañón was the president. More than forty-five countries and a large number of medical societies sent delegations. There were the following delegates: Drs. Diepgen from Germany, Max Neuburger of Vienna from Austria, Tricot-Royer from Belgium, Leignel-Lavastine and Guiart from France, Giordano and Capparoni from Italy, and Edgar Erskine Hume, Howard Dittrick, Edward B. Krumbhaar and Henry E. Sigerist from the United States. The official topics were Arabic medicine in Spain, medicine in America during its discovery and colonization, and medical folk-lore in civilized countries. The official reunion of the delegates took place September 22. Dr. Laignel-Lavastine read an oration in memory of Drs. Jeanselme, Garrison and Menetrier, deceased members of the congress. Dr. Marañón discussed the proposed establishment of an institute of the history of medicine and of a branch of the International Society of the History of Medicine in Spain. Ceremonies for the opening of the exhibition of the congress followed. Collections of instruments, books, electrical apparatus, illustrations of medical treatments, drugs, paintings and other items showing the evolution of medicine and its branches from its early life up to the present were exhibited. The most important collections were those sent by the Wellcome Laboratories of London and by several faculties and academies of medicine and pharmacy and by some national libraries. A general reception marked the end of the evening.

The opening of the congress took place in the Hospital de la Santa Cruz, in Toledo, September 23. Addresses were made by the minister of public education, who represented the president of Spain, by the general secretary of the congress, Mr. Oliver, by the delegate from Italy and by the president of the congress, Dr. Marañón. Receptions were given to the delegates before their return to Madrid, and festivities were held in their honor.

The first plenary session was held September 24. Dr. Capparoni presented an address on Arabic medicine in Spain at the end of the thirteenth century. Dr. Guiart spoke on the Persian origin of Arabic medicine. Dr. Angelica Panayotatou, a teacher of hygiene in Alexandria, spoke on the rôle that both the teachings and the books of Abulkasim (1110 A. D.) and of Averroes (1126-1198) and the many translations of Arabic medical works into Spanish had in the dissemination of medicine in Europe. The Spanish-Arabians of the tenth and eleventh centuries, because of their frequent voyages to the eastern regions of Europe, learned about new methods of treating diseases, new drugs and the preparation of aromatic waters. Hospitals and reading rooms existed in Spain by that time. The city of Cordoba had fifty hospitals and a library with about 225,000 books, and the rights of the insane to be treated with humanitarianism and the performance of inhalation anesthesia were known by that time. Dr. Bravo spoke on Mohammedan hospitals, physicians and quacks during the reign of Philip II. Dr. Goyanes presented to the audience his translation of Abulkasim's surgery. He made an address in Latin on the importance of the books in the exposition and their meaning to the history of medicine. After the session, the delegates attended the inauguration of the memorial room to Cajal, which contains his death mask, his desk, his microscope and his medals and prizes.

The second session was held September 25. Dr. De Silva Carvalho spoke of medicine at the time of the discovery and colonization of Brazil. Brazilian medicine developed especially from the teachings of a group of Jewish physicians who came to Brazil with the fleet of Pedro Alvarez Cabral and acquired extensive knowledge of diseases of natives and immigrants. Dr. Borzone of Argentina gave a biographic sketch of Manuel Rodriguez de Montonera and emphasized the work on leprosy that this physician carried on. Dr. Bazzochi of Italy spoke on medicine and surgery in Peru before the Spanish conquest. Native Peruvians knew something of the therapeutic properties of the fauna, flora and minerals of their soil. The speaker reviewed the history of the treatment of seta and verruga, two native diseases. Dr. Clavijero said that physicians of the old Spanish navy deserve the priority for the administration of vaccination in America.

In the afternoon the delegates were tendered a banquet at the Museo Naval, where they heard lectures on sanitation in the navy and were shown old charts of Spanish explorers and old documents of physicians in the fleets, in which the unhealthful results of feeding the crew with rice were pointed out. In the evening they attended an official reception at the palace of the ministry of foreign affairs.

At the third session, September 26, the topic of medical folk-lore was discussed. Dr. Laignel-Lavastine said that it has both theoretical and practical value. It clarifies several of the factors involved in the evolution of human civilization. Medical folk-lore can be classified into three groups: ethnic, magical and religious and popular folk-lore. It originates in psychologic factors and develops in social factors. Dr. Castiglione reviewed the myths of the medical Italian folk-lore and marked the points of its differentiation from the folk-lore in other countries. Dr. Borzone of Argentina spoke about the method of cutting hair short as a folk-lore method in the prevention of exanthematous typhus in Argentina and he sang popular folk-lore songs, accompanied at the piano by Professor Sphinca. Drs. Karn, Comrie and Sixto spoke on medical folk-lore in Hungary, Scotland and the Philippine Islands, respectively. Dr. Castiglione spoke on the rôle of the old civilization of the Mediterranean races in the development of medicine. These races inherited the civilization of ancient countries through the Greeks, Romans and Arabians. Arabian-Italians and Arabian-Spaniards played an important part in the development of medicine, first in Europe with Galen in Italy and Maimonides in Spain, and then by the discovery of America and colonization. Dr. Gomoiu spoke on folk-lore in the Balkan countries. Medical folk-lore was an obstacle to the progress of medicine and yet certain folk-lore methods were the basis for scientific studies that resulted in advances in medicine. Bathing originated among the people who lived near the Aegean sea. Rumanians used petroleum as a curative agent and they used the fat of bears for stimulating the growth of hair. There was a suspicion in some oriental countries that malaria was caused by an organism that lived in ponds. Dr. Stoianoff spoke on medical folk-lore in Bulgaria. His interesting article appears in the proceedings of the congress. Dr. Sigerist, direc-

tor of the Institute of the History of Medicine at Johns Hopkins, said that medicine is a social science. Its history should be studied from the sociological and economic angles. The treatment and care of patients are only the means through which medicine obtains its aim, the restoration of healthy individuals to society. The application of medical knowledge is related to social and economic conditions. The members of the Johns Hopkins institute are attempting to establish a new branch of medicine, medical sociology, through which the relations between patients and physicians can be more clearly understood. Dr. Decref of Madrid spoke on the hospital for traumatic cases in the Escorial in 1563, and of its rôle in the development of surgery, and the treatment of fractures in Spain. Dr. Hyman I. Goldstein of Camden, N. J., spoke on the priority of Italian physicians in the introduction of liver therapy in anemia. Drs. Castellini and Pirera of Naples reported in 1910 and 1912 the results of their work in administering liver extract to patients with anemia. Minot, Murphy and Whipple were unaware of these reports. Dr. Felix Marti Ibañez of Barcelona spoke on miracles. There are two large groups of performers: those who pretend to read the stars and those who cure by psychoanalysis, hypnotism, suggestion, chromotherapy, phonotherapy and other methods. In both groups the performers are only exploiters of the faith of the patient. The speaker reviewed the history of the mystical physiology and psychology of India.

At the fifth session, September 27, the delegate from the Philippine Islands spoke on the evolution of medicine and medical folk-lore. Dr. Manuel Villaverde reviewed the history of medicine in Cuba, where before the Spanish conquest the natives considered digestive disturbances the cause of all diseases. Drs. Guisan and Royo Villanova spoke on medical folklore in Switzerland and in the province of Aragon, respectively. Dr. Laignel-Lavastine read a paper by Dr. Torkoiman on the history of the Siguenza pharmacy, which was established in 1664. Dr. Capparoni spoke on Diego Alvarez Echance, a Spanish physician who accompanied Columbus on his second voyage to America. Dr. Javier Cortezo, organizer of the congress and director of *El siglo médico*, gave a biography of Dr. Juan Sorapan de Rieros. Dr. Francisco J. Blanco Justo delivered an address on the relations between botany and the development of Arabian medicine. Dr. Ramiro de Rinedo gave a biography of Saint Isidore, who was a teacher of medicine in Europe in the seventh century.

At the final session, September 28, Dr. Reichbon emphasized the influence of Galen and his school on the evolution of Scandinavian medicine. Dr. Alfonso de la Peña reviewed the evolution of transureteral surgery. Dr. Max Neuburger of Vienna gave a biography of Dr. Gomez Pereira, Spanish philosopher and physician of Philip II. Dr. Isidro de la Villa of the University of Valladolid reported on the ordinances of physicians and pharmacists during the time of the Catholic kings. Dr. Sanchez de Rivera spoke on the work of the Spanish physicians of the fifteenth and sixteenth centuries. A visit was paid by the group of Rumanian physicians to the monument erected in the Military Hospital Carabanchel in 1929 to the Spanish physicians who died at Morocco.

The following conclusions were approved: The articles read during the tenth International Congress of the History of Medicine proved that Arabian-Spanish medicine inherited the Greek and Roman civilization and that Spain was the source of dissemination of medicine to the oriental countries; that the civilization of the Latin races had a great influence on the evolution of science and medicine in South America after the colonization in those countries, and that medical folk-lore is of importance for the critical study of the origin of civilization and of medicine. It was resolved that further studies on medical folk-lore be made by a committee of members of the International Society of the History of Medicine. The priority of Carlos Finlay in the discovery of the transmission of yellow fever was proposed and accepted amid applause. A reception and dance was held September 29.

Personal Items

The Gran Cruz del Merito Militar, the highest medal in the Spanish army, has been awarded to Dr. Mariano Gomez Ulla for his work as a surgeon in the army. Dr. Gomez Ulla is very popular. Members of the parliament voted unanimously to give him the medal.

Two statues were recently unveiled: a bust of Dr. Garcia Tapia, professor of otorhinolaryngology at the Faculty of Medicine of Madrid, and a bust of Dr. José Luis Lopez de Haro. Dr. Garcia Tapia's bust was unveiled at Riaza, Segovia. Dr. Lopez de Haro's bust was unveiled in Almaden de Minas, a center of mines of mercury. Both physicians are still living.

A ceremony took place in the old University of Alcalá de Henares, September 29, at which the degree "Doctor ad honorem" was bestowed on Drs. Max Neuburger of Vienna, Tricot-Royer of Brussels, Howard Dittrick of Cleveland, Ohio, Victor Gomiou of Bucharest, Laignel-Lavastine of France, David Giordano of Venice, Pablo Diepgen of Berlin, Reichborn Kjennerud of Oslo and Humphry Rolleston of London.

TURKEY

Oct. 14, 1935.

The National Medical Congress

The sixth Turkish National Medical Congress has just closed. The sessions of the congress were opened with an address by Premier General Ismet Inönü in which he rehearsed the sacrifices Turkey had made and the efforts put forth in the campaign to control the drug traffic. He concluded with a recommendation that the medical profession continue its efforts to make similar progress in combating the evils of alcoholism and in seeking new light on the understanding and treatment of disease.

Besides the addresses scheduled on the regular program there were addresses by representatives of the Soviet Medical Association, who were present as guests of the congress.

Two main subjects for discussion had been chosen. The first was alcohol and other intoxicants. The congress went on record, without a dissenting voice, as being in favor of having the government take vigorous steps to control and limit the use of alcoholic beverages. The American experiment in prohibition and its apparent failure were frequently mentioned, but there was a feeling that a similar experiment would probably meet with more success if it was undertaken in Turkey. Dr. Fahrittin Kerim Gökay, the general secretary of the association, summed up the discussions on this question. His closing words are noteworthy. He said that, though the profession realized that it would have to make progress slowly and in the beginning would probably have to be satisfied if the use of raki could be limited, it was to be clearly understood that the ultimate goal was absolute prohibition.

The other main subject was rheumatism. The discussions following reports on this subject were so prolonged that a number of papers on miscellaneous subjects that were to have been read on the last day had to be omitted. Emphasis was laid on the value of physical therapy in chronic rheumatic disease and the need of further study along these lines.

The congress prepared a splendid health exhibit for the general public. The various acute contagious diseases, with the method of spread, incubation period, early signs and symptoms were illustrated by pictures, casts, models, and short, vivid sentences. Each disease was presented in a separate booth and the need of skilled medical care for each was emphasized. The subjects were so simply and caretully presented that the information could reach the simplest villager.

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In a similar manner the work and progress of the national school for the deaf and blind and of the commissions for the control of tuberculosis, malaria and venereal disease were presented. It is a highly educational exhibit and is to remain open to the public for some months. In the meantime, efforts are being made to get together similar material for a portable exhibit, which can be taken into the villages.

At the closing session of the congress the subjects of hygiene and grip were chosen as the main subjects for discussion at the seventh congress to be held in Ankara in 1937.

ITALY

(From Our Regular Correspondent)

Sept. 15, 1935.

Problems of Higher Instruction

Problems pertaining to higher instruction have been considered of late by parliament. In the chamber of deputies the minister of public instruction announced that, in some twenty Italian universities, clinics and scientific institutes, all well equipped, have been created, which has required an outlay of about 600,000,000 lire, or $48,000,000.

Zingale spoke on academic freedom in teaching at Italian universities and on the custom of granting the venia legendi in medicine to privatdozents. According to the speaker, in recent years the number of privatdozents that have been appointed has been large.

In the senate, Professor Giordano recommended a more extensive practical preparation for physicians, who often present themselves for the "state examination" too soon after graduation from the university. The speaker expressed the view that the venia legendi should not be granted to the physician who merely furnishes evidence of having specialized in a given branch of medicine but should be reserved for the physician who demonstrates, at the same time, that he has delved deeply in all the related general sciences.

Senator Maragliano expressed the belief that the minister of public instruction should exercise greater influence in the appointment of university professors than at present. He said also that the instruction in the faculties of medicine is organized on the basis of too doctrinal conceptions, whereas it should be coordinated on the basis of the positive finalities of the studies.

The Academy of Medicine of Turin

Before the Academy of Medicine of Turin, Professor Ribeiro of Rio de Janeiro discussed the value of finger prints in legal medicine. Leprosy, he observed, destroys completely the finger prints. This alteration occurs in about 80 per cent of the cases, not only in patients who present nerve lesions but also in those in whom the hand shows no apparent lesions. In the latter cases white lines are observed that cut transversely the figures formed by the papillae, so that it may prove possible to establish an early diagnosis of leprosy dactyloscopically in suspected cases. In the right hand of patients with sclerodermia the speaker has observed frank changes that present an entirely different aspect from those of leprosy. Radiologists also develop not infrequently lesions affecting the finger prints. Professor Ribeiro said in conclusion that dactyloscopy preserves nevertheless its medicolegal value, it being impossible to change a finger print or to confound it with another, and even the pathologic lesions constitute a new means of identification.

Petit, of the Pasteur Institute of Paris, reported his research on the method of preparing serum with which to combat Leptospira icteroides. He observed some similarity between these observations and those characteristic of anterior poliomyelitis, and hence he holds that in the spinal cord of patients with poliomyelitis there is a previously unrecognized organism. On injecting a horse with the spinal cord tissue of an animal that died from poliomyelitis, he obtained, after three months, serum that had the property of combating the virus of poliomyelitis. The serum is prepared, at the Pasteur Institute, by the use of the spinal cord tissue of monkeys that have died from poliomyelitis; in about 70 per cent of the horses that are injected for the preparation of the serum there is no production of immunisins. The serum has been in use for about fifteen years. The results secured may be summarized thus: If the serum is injected in the preparalytic stage, neither paralysis nor paresis develops. The serum cures the paralysis in a large number of adults but not in children and reduces the mortality about one half.

Visit of French Physicians

A committee of French physicians came to Italy recently to study the application of the law pertaining to compulsory insurance against tuberculosis. They visited first the sanatoriums and the hospitals of Lombardy. They then continued their journey to Rome, where they visited the Carlo Forlanini Institute for the study of tuberculosis. At the Bernardo Ramazzini Sanatorium, Professor Bocchetti explained his ideas concerning postsanatorial treatment. The committee visited also the Istituto di igiene e sanità pubblica, the Istituto per lo studio e la cura del cancro, and the Scuola superiore di educazione fisica.

The Public Health Service

Prof. Gianni Petragnani, of the chair of hygiene at the University of Siena, has been appointed "director general" of the public health service.

Prof. Dante De Blasi, academician of Italy, has been appointed director of the Istituto di sanità, a new institute that comprises laboratories of microscopy and bacteriology, as applied to hygiene; laboratories of chemistry, physics and sanitary engineering; a laboratory for biologic researches on the use of opotherapeutic products; a laboratory for investigations on the diffusion and the prophylaxis of malaria, and a laboratory for researches on epidemiology and the prevention of infectious diseases.

Retirement Age for University Professors

To speed the introduction of new blood in the schools and make the conditions of the instructing personnel correspond to those recently established for all civil functionaries, the ministerial cabinet has approved the draft of a law that would reduce by five years the age limit for the compulsory retirement of university professors (at present 75 years) and of school principals and teachers (at present 70 years). The decree will go into effect this year; but those who have to leave the service earlier than they anticipated will be allowed certain concessions. For example, in order that teachers may attain the length of service (forty years) necessary to secure the maximum pension, time spent in the supply service will be counted in full.

Marriages

MARTIN CARL LINDMAN, Rockford, Ill., to Miss Alice Dorothy Port of Youngstown, Ohio, September 2.

RUBIE M. DURGIN, Berkeley, Calif., to Mr. Andrew B. McKinne of San Francisco, September 14.

BEVERLY WILKINS NASH to Miss Frances Lucille Bowers, both of Timberville, Va., September 1.

RICHARD W. TERRILL, Indianapolis, to Miss Frances Bielby of Lawrenceburg, Ind., in September.

RALPH J. MCQUISTON, Indianapolis, to Miss Barbara Douglass of Franklin, Ind., September 7.

ALFRED CURTIS ORMOND JR., Zanesville, Ohio, to Miss Anne Slingluff of Cambridge recently.

THEODORE CAMPBELL THOMPSON, to Miss Cornelia Tomlin, both of New York, August 17.

EDWARD FRANKLIN BLAND, Boston, to Miss Frances Poinier of Winchester, September 7.

LAWRENCE N. HOST to Miss Gertrude Casey, both of Detroit, September 4.

Deaths

Felix A. Larue ✠ New Orleans; Tulane University of Louisiana Medical Department, New Orleans, 1889; in 1898 lecturer and clinical instructor in general operative surgery, including applied anatomy and orthopedics, New Orleans Polyclinic, and in 1900 appointed professor of operative surgery and applied anatomy; when the New Orleans Polyclinic was taken over by Tulane University in 1906 he was given the rank of professor of operative and clinical surgery; in 1924 was made professor emeritus; secretary and treasurer of the Louisiana Board of Medical Examiners, 1905-1910; for many years physician for the French consulate, and in 1913 was awarded the *Officier d'Instruction Publique* by the French government; for many years a member of the board of directors of the Mercy Hospital and St. Mary's Orphan Asylum; aged 70; died, October 5, in the Touro Infirmary.

Morgan Smith ✠ Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1889; Tulane University of Louisiana Medical Department, New Orleans, 1904; member of the House of Delegates of the American Medical Association, 1912-1914; professor of pediatrics and formerly dean, University of Arkansas School of Medicine; past president and secretary of the Arkansas Medical Society; at one time member of the state board of health and state health officer; member of the American Academy of Pediatrics; fellow of the American College of Physicians; on the staffs of the Little Rock General and Baptist State hospitals and St. Vincent's Infirmary; aged 67; died, September 14, of arteriosclerotic heart disease.

Daniel Kerfoot Shute ✠ Washington, D. C.; Columbian University Medical Department, Washington, D. C., 1883; professor emeritus of clinical ophthalmology, George Washington University School of Medicine and formerly prosector to the chair of anatomy, lecturer, and professor of anatomy; past president of the Medical Society of the District of Columbia; member of the American Academy of Ophthalmology and Oto-Laryngology and fellow of the American College of Surgeons; on the staffs of the Providence Hospital, Central Dispensary and Emergency Hospital, Columbia Hospital, St. Elizabeth's Hospital and the George Washington University Hospital; aged 76; died suddenly, October 21, of arteriosclerosis and coronary thrombus.

Albert Edward Roussel ✠ Philadelphia; Jefferson Medical College of Philadelphia, 1882; emeritus professor of medicine, University of Pennsylvania Graduate School of Medicine; formerly associate professor of practice and clinical medicine, Medico-Chirurgical College of Philadelphia; fellow of the American College of Physicians; awarded *Officier d'Académie* and *Chevalier de la Légion d'Honneur;* formerly physician to the French and the Argentine consulates; aged 72; died, November 2, in the Graduate Hospital of the University of Pennsylvania, of heart disease.

Peter Conover Field ✠ Colonel, U. S. Army, retired, Pasadena, Calif.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1895; fellow of the American College of Surgeons; entered the regular army as an assistant surgeon in 1901; was appointed a captain in the medical corps in 1906; served during the World War; in 1927 was made a colonel; retired in 1932 for disability in line of duty; aged 65; died, September 9.

John McCabe ✠ New York; Columbia University College of Physicians and Surgeons, New York, 1902; formerly professor of internal medicine, New York Polyclinic Medical School and Hospital and instructor of pediatrics, Bellevue Hospital Medical College; aged 57; on the staffs of the New York City Hospital, Jewish Memorial Hospital, Long Beach Hospital and the Midtown Hospital, where he died, October 7, of cerebral hemorrhage.

Cosam Julian Bartlett ✠ Colonel, U. S. Army, retired, Santa Cruz, Calif.; University of California Medical Department, San Francisco, 1898; entered the regular army as an assistant surgeon in 1901; was appointed a captain in the medical corps in 1906 and a colonel in 1927; served during the World War; retired in 1934 for disability in line of duty; aged 61; died, September 7, in Los Angeles, of coronary occlusion and myocarditis.

Charles Parsons Gildersleeve, Port Jefferson, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1881; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; consulting surgeon to St. Peter's Hospital, Brooklyn, and St. Anthony's Hospital, Woodhaven, N. Y.; aged 75; died, September 28, of coronary heart disease.

Clarence Carl Pflaum, Duluth, Minn.; University of Minnesota Medical School, Minneapolis, 1930; member of the Missouri State Medical Association; formerly assistant professor of pathology, University of Missouri School of Medicine, Columbia; aged 35; on the staff of St. Luke's Hospital, where he died, September 10, of suppurative otitis media, cerebral abscess and secondary meningitis.

Heinz Langer, Pittsburgh; Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen, Bavaria, Germany, 1917; member of the Medical Society of the State of Pennsylvania and the American Roentgen Ray Society; served during the World War; aged 47; on the staff of the Western Pennsylvania Hospital, where he died, September 28, of pneumonia.

Robert George William Dalby, Ann Arbor, Mich.; University of Michigan Medical School, Ann Arbor, 1931; member of the Michigan State Medical Society; instructor in obstetrics and gynecology at his alma mater; on the staff of the University Hospital; aged 29; killed, September 29, in an automobile accident near Northville.

John Francis McEncroe, Schenectady, N. Y.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1887; an Affiliate Fellow of the American Medical Association; for many years city physician and police surgeon; aged 74; on the staff of the Ellis Hospital, where he died, October 2.

Rachel A. Watkins Long, Holdrege, Neb.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1906; member of the Nebraska State Medical Association; secretary and past president of the Phelps County Medical Society; aged 55; died, September 29, of carcinoma.

Solomon Garfield Smelser, Liberty, Ind.; Medical College of Indiana, Indianapolis, 1905; member of the Indiana State Medical Association; formerly member of the state board of medical registration and examination; served during the World War; aged 55; died, September 16, of sarcoma.

Thomas Bernard McQuaid, Everett, Mass.; Dartmouth Medical School, Hanover, N. H., 1896; member of the Massachusetts Medical Society; member of the local board of health; on the staff of the Whidden Memorial Hospital; aged 75; died, September 19, in Webster, of pneumonia.

Fred Lewis Neely ✠ Shelton, Wash.; Western University Faculty of Medicine, London, Ont., Canada, 1908; served in the Canadian Army during the World War; aged 50; died, September 12, in Olympia, as a result of brain injuries received when he fell from a four story hotel window.

Isadore Maurice Leavy ✠ Lynbrook, N. Y.; Long Island College Hospital, Brooklyn, 1911; served during the World War; on the staff of the Montefiore Hospital for Chronic Diseases, New York; aged 46; died, October 7, in the Mount Sinai Hospital, New York, of pneumonia.

John Brett Trainor, Fall River, Mass.; McGill University Faculty of Medicine, Montreal, Que., Canada, 1897; member of the Massachusetts Medical Society; aged 67; on the staffs of the Union Hospital and St. Anne's Hospital, where he died, September 20, of cerebral thrombosis.

Isidor J. Propper ✠ Gary, Ind.; Cleveland College of Physicians and Surgeons, Medical Department Ohio Wesleyan University, 1900; aged 67; on the staffs of St. Mary's Mercy Hospital and the Methodist Episcopal Hospital, where he died, September 27, of pneumonia.

Frank Guy Devereux, Portland, Maine; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1880; member of the Maine Medical Association; aged 76; died, October 2, in the Maine General Hospital, of coronary occlusion.

Lotharo L. Morey, Vandalia, Ill.; Physio-Medical Institute, Cincinnati, 1881; Physio-Medical College of Indiana, Indianapolis, 1882; member of the Illinois State Medical Society; aged 78; died, September 14, of interstitial nephritis.

Osmon Charles Church, Steeleville, Ill.; Barnes Medical College, St. Louis, 1910; member of the Illinois State Medical Society; served during the World War; aged 61; died, September 9, in the Christian Welfare Hospital, East St. Louis.

Joseph Pinkney Turner ✠ Greensboro, N. C.; University of Maryland School of Medicine, Baltimore, 1896; medical director of the Jefferson Standard Life Insurance Company; aged 63; died, September 29, of coronary thrombosis.

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Joseph Francis Fallon, Brookline, Mass.; Jefferson Medical College of Philadelphia, 1908; member of the Massachusetts Medical Society; served during the World War; aged 53; died, October 14, of hemorrhage due to ruptured esophageal varices.

J. Fred Eckerson, Shelby, N. Y.; University of Buffalo School of Medicine, 1899; member of the Medical Society of the State of New York; aged 58; died, September 10, in Medina, of cerebral hemorrhage and hypertension.

George Junkin Gouger, Concord, N. C. (licensed in North Carolina in 1901); member of the Medical Society of the State of North Carolina; aged 73; died, September 12, of coronary thrombosis and pernicious anemia.

Osmyn Baker, Penns Grove, N. J.; Columbian University Medical Department, Washington, D. C., 1899; aged 68; died, October 11, in the Homeopathic Hospital, Wilmington, Del., of cerebral hemorrhage.

William Frank Henderson, Blacksburg, Va.; Washington University School of Medicine, Baltimore, 1876; member of the Medical Society of Virginia; aged 81; died, September 23, of chronic myocarditis.

Auxilien Clement J. Gervais ✠ Milton, N. Y.; University of Vermont College of Medicine, Burlington, 1927; aged 34; died, September 20, in the Vassar Hospital, Poughkeepsie, of chronic nephritis.

Arthur Densmore Spence, South Lebanon, Ohio; Miami Medical College, Cincinnati, 1895; member of the Ohio State Medical Association; aged 67; died, October 4, of arteriosclerosis.

Alphonso A. W. Bley, Los Angeles; University of Pennsylvania Department of Medicine, Philadelphia, 1886; also a pharmacist; aged 83; died, September 29, of gastric ulcer.

James Edward Poulin ✠ Waterville, Maine; Medical School of Maine, Portland, 1905; on the staff of the Thayer Hospital; aged 55; died, October 2, of lobar pneumonia.

Otto Elbert Harmon, Kiowa, Kan.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1905; aged 61; died, September 17, of carcinoma of the jejunum.

James Allan Todd, Toronto, Ont., Canada; University of Toronto Faculty of Medicine, 1879; L.R.C.S., L.R.C.P., Edinburgh, Scotland, 1880; aged 82; died, September 19.

William Henry Bennett, Los Angeles; Tufts College Medical School, Boston, 1906; served during the World War; aged 65; died, September 4, of carcinoma of the stomach.

Francis Emanuel McNamara, Milwaukee; Hahnemann Medical College and Hospital, Chicago, 1879; aged 79; died, September 17, of atrophic cirrhosis of the liver.

Allison Herbert Edwards, Grand Rapids, Mich.; Grand Rapids Medical College, 1900; city health officer; aged 53; died, September 29, of coronary occlusion.

Otho Christian Buxton ✠ Webster City, Iowa; King Eclectic Medical College, Des Moines, 1885; aged 78; died, September 17, of coronary thrombosis.

William Stevenson ✠ Des Moines, Iowa; Drake University Medical Department, Des Moines, 1894; aged 77; died, September 15, of pernicious anemia.

William Myron Edgerton, Wichita, Kan.; St. Louis College of Physicians and Surgeons, 1899; aged 65; died, September 12, of cerebral hemorrhage.

Frank Wilmoth Gray, Washington, D. C.; Howard University College of Medicine, Washington, 1925; aged 42; died, October 20, of bronchopneumonia.

John M. Campbell, Russellville, Ark.; Memphis (Tenn.) Hospital Medical College, 1890; police judge; formerly mayor; aged 76; died, August 28.

Edward Abeles, Leavenworth, Kan.; Harvard University Medical School, Boston, 1878; aged 80; died, September 21, of cerebral hemorrhage.

Cyrus B. Phillips, Pitman, N. J.; University of Maryland School of Medicine, Baltimore, 1882; aged 76; died, September 16, of heart disease.

Cyrus Maxwell Boger, Parkersburg, W. Va.; Hahnemann Medical College and Hospital of Philadelphia, 1888; aged 74; died, September 2.

John H. Dubbs ✠ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1891; aged 67; died, September 6.

Edward Francis Lawlor ✠ Lawrence, Mass.; Baltimore Medical College, 1905; aged 57; died, October 6, of coronary sclerosis.

Loring V. Miner, Sublette, Kan. (licensed in Kansas in 1901); aged 75; died, September 30, in an automobile accident.

Correspondence

INJECTION METHOD FOR HERNIA

To the Editor:—In the past four months a number of my patients who have had injections for sclerosing inguinal hernias have reported that they have been sexually impotent since the injections of the sclerosing fluid. One dated back to eight years, several to two years, and one was of four months.

I think the patient should be told of the possibility of sexual impotence following the use of these injections in all inguinal hernias.

OSCAR A. STRAUSS, M.D., Chicago.

THE TUBERCULIN REACTION

To the Editor: — Dr. Ustvedt's statement (THE JOURNAL, March 9, p. 851) that "tuberculin negative individuals who are not exposed to infection cannot be expected to develop clinical tuberculosis" has been the crux of our argument, which Dr. Harrington and I have emphasized in numerous publications for fifteen years. Therefore his statement that "this is a fact that has been neglected by many investigators and latest by Myers and Harrington" is hardly justified. On this point, we are in complete agreement with Ustvedt. One of the objects of our paper (THE JOURNAL, Nov. 17, 1934, p. 1530) was to emphasize the fact that children who react negatively to the tuberculin test, when observed over a period of years and into adult life, are much better risks from the standpoint of the development of clinical tuberculosis than children who at the same time have positive tuberculin reactions. To be sure, each of our negative reactors who later developed clinical tuberculosis first became a positive reactor, whereupon the tuberculosis status was essentially the same as in the group who originally reacted positively to the test; that is, in each instance they developed the benign first infection type of tuberculosis, which every one of our originally positive reactors had when our observations began. One of the main points of our paper was to emphasize the fact that apparently healthy children who react positively to the tuberculin test are not as well immunized as we formerly believed. Already 10 per cent of those whom we examined fourteen years ago have developed clinical forms of disease. Such a record in smallpox or diphtheria would dampen enthusiasm for immunization against these diseases.

Dr. Ustvedt calls attention to the observations of Dr. Heimbeck, which showed that all the student nurses who were negative to the tuberculin test on admission to the nursing school became positive tuberculin reactors by the time of graduation, and that, during the three years of training, 4.8 per cent of the girls who were positive to the tuberculin test when they entered training developed clinical tuberculosis before graduation, while 34.6 per cent who were originally negative developed clinical tuberculosis, "including milder forms of tuberculous disease, as erythema nodosum."

On analysis of Dr. Heimbeck's figures, one is impressed with the large number of originally negative reactors grouped as having developed clinical disease, who had only erythema nodosum, enlargement of the hilus lymph nodes, and so on. If Dr. Heimbeck's students develop the same types of lesions as did the students of nursing and medicine we have observed, many of those he describes with parenchymal lesions must have been due only to the first infection benign type of tuberculosis. We do not look on erythema nodosum, enlarged hilus lymph nodes, or even parenchymal lesions of the first infection type as clinical disease in the strict sense of the word. We have not yet seen one of these persons, either in childhood or in adult life, fall ill from the first infection type of focus per se. When symptoms do appear in this group, they are due in our experience to a manifest complication.

One must assume, therefore, that the 34.6 per cent of previously negative reactors who, according to Dr. Heimbeck's classification, developed clinical tuberculosis for the most part had lesions of the first infection type. If this should be carried to its logical conclusion, all the girls who became positive to the tuberculin reaction had clinical disease, since all of them must have had lesions somewhere in the body in order to produce positive tuberculin reactions. The fact that the roentgen examination of the chest did not reveal enlargement of the lymph nodes or parenchymal lesions, and the fact that erythema nodosum did not occur, does not rule out lesions so small that the x-ray film would not reveal them in the lungs or hilus lymph nodes or in other parts of the body which do not lend themselves to roentgen examination. Moreover, all the girls who entered the school of nursing with positive tuberculin reactions had first infection type of lesions somewhere in their bodies. If one had a complete history of each case and serial x-ray films, in all probability it would be found that they had already passed through the form of tuberculosis which has been seen to develop among the negative reactors when they became positive. Therefore, according to Heimbeck's classification, each of these girls who gave a history of having had erythema nodosum, or had an x-ray film showing at some previous time enlargement of the hilus nodes or even parenchymal involvement, would have to be classified as clinical cases of tuberculosis. The only difference in the two groups is that he saw the one group experience what the other group had experienced before they came under his observation.

In one of our groups of positive reactors, there was x-ray evidence of disease in approximately 22 per cent on first examination, such as pneumonic areas about first infection foci, deposits of calcium in the hilus, and Ghon tubercle formation in the lung parenchyma. If a very complete history were obtainable, in all probability there would be enough others who had had attacks of erythema nodosum and other mild manifestations of the first infection type of disease to increase our percentage to approximately that which Heimbeck observed in his previously negative group of nurses.

During the past fifteen years we have observed the complete evolution of tuberculosis in the bodies of a good many children and adults; that is, we have seen the tuberculin test first become positive and have watched the first infection type of disease develop and come under control without producing any significant symptoms. Later, in the same cases we have observed the reinfection, destructive type of disease make its appearance and progress to the advanced stage with serious illness and in some instances death. We have carefully observed persons negative to the tuberculin test, who later became positive. In the small percentage of this group who develop parenchymal lesions of the first infection type there is an interval of from several weeks to four or five months after the test becomes positive before the lesion is large enough to cast a shadow that can be visualized on the x-ray film. Although these persons are not ill, there is an immediate and a remote danger. The immediate danger consists chiefly of bacilli from the first infection focus finding their way to a ramification of a bronchus, the pleura, the blood stream or the subarachnoid space. Tuberculous pneumonia in a very destructive form may follow the outpouring of bacilli in a bronchial ramification. When the lesions are located near the periphery of the lung, pleurisy with effusion, which is a reinfection form of tuberculosis, is a rather common immediate danger. Again, when the lesion, whether in the parenchyma or in the regional lymph nodes, burrows into a blood vessel, miliary tuberculosis often follows. This also is a reinfection form of disease. When a first infection focus is in or near the central nervous system and its bacilli are set free into one of the ventricles of the brain or directly into the subarachnoid space, diffuse tuberculous meningitis usually results. Any one who watches a sufficiently large group of negative reactors become positive will see some of these reinfection types of tuberculosis, which develop soon after the first infection type of focus is established. Wallgren (*J. Pediat.* **5**:291 [Sept.] 1934) has pointed out that these fatal forms of tuberculosis in infants occur most frequently within the first three months after infection develops. Dr. Heimbeck has already reported a few such cases among student nurses.

The remote dangers develop long after the first infection focus is laid down and consist of chronic lesions, which make their appearance in the lung, kidney, bones and joints. No one can observe a sufficiently large group of negative reactors a long time after they become positive to the tuberculin test without seeing some suffer from these remote dangers. In reality, the groups Scheel, Ustvedt and Heimbeck have compared are not comparable unless they know the tuberculosis situation among the ranks from which their positive tuberculin reactors came. The only way a true comparison can be made is to observe the negative reactors who become positive over a period as long as their positive reactors have been positive.

We would be interested to know whether Dr. Scheel, reporting on medical students, and Dr. Ustvedt, reporting on 4,800 children, used the same classification as Dr. Heimbeck with reference to clinical disease. In our group, only cases of frank pulmonary tuberculosis of the destructive reinfection type were included. Apparently, the chief point of misunderstanding lies in the different ways in which cases of tuberculosis are classified. If the same classification was used, we are apparently in very close agreement.

Dr. Ustvedt mentions allergy in both his first and concluding paragraphs, and he shows a tendency to minimize its importance. He calls attention to a group of patients with erythema nodosum in which there was a high degree of allergy. In this group there was a morbidity of 10.3 per cent during the first year and for the following years up to the tenth from 3 to 0 per cent. We are cognizant of the fact that erythema nodosum is sometimes the result of a high degree of allergy to tuberculoprotein, but by no means do we consider every case as due to this cause. For example, Pilot (Central Society for Clinical Research, October 1933, p. 16) after making a careful study of this condition said "It would appear that erythema nodosum is not a clinical entity but a peculiar hypersensitive response of the skin to toxic products from foci of infection due to streptococci, tubercle bacilli, the virus of lymphogranuloma inguinale and perhaps other agents." Therefore there hardly seems justification for considering every case of erythema nodosum as due to tuberculosis, even though the tuberculin test is markedly positive. The South African studies (*Publications of the South African Institute for Medical Research*, Johannesburg, vol. 5, 1932; *Bull. Internat. Union Against Tuberculosis* **12**:234 [July] 1935), which showed that the highly allergic individuals were far more likely to develop true clinical disease than others, are significant in this connection.

It seems paradoxical to look on allergy to pollens and foods as being a responsible factor for the development of hay fever, some forms of asthma, rhinitis and gastro-intestinal disturbance, and at the same time to look on allergy to tuberculoprotein not only as a factor without harm but one that is beneficial to the human body. There has been an abundance of experimental work to show that allergy is the cause of the much more intense reaction of the tissues to tubercle bacilli of reinfection than is seen in first infection. The harmful effect of allergy to tuberculoprotein is now recognized by such large numbers of workers that we are already looking forward to a method of desensitizing highly allergic individuals in order to prevent necrosis and great destruction of tissue from the reinfection type of disease.

J. ARTHUR MYERS, M.D., Minneapolis.

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Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

ANGINAL ATTACKS WITH GALLBLADDER INFECTION

To the Editor:—Kindly discuss the following symptom complex, suggesting the diagnosis, prognosis and treatment, including the diet. A man, aged 59, single, complains of repeated attacks of an anginal syndrome while walking, characterized by a feeling of pressure or constriction behind the manubrium sterni, which is relieved by coming to a stop or on sitting down. There is no pain associated with the discomfort, no dyspnea, a slight increase in the pulse rate, and it does not radiate but remains fixed back of the sternum, necessitating slowing up or sitting down. It passes away in from three to six minutes. He is extremely nervous, owing to difficulties at his place of employment. He had insomnia which lasted throughout the latter eight months of 1934 but from which he is now fairly recovered. The chest discomfort first manifested itself during the first week of February 1935, and during March it appeared every second or third day with the same train of symptoms. During April the same thing happened seven times, while in May and June it averaged about once weekly. On one occasion it followed a slight difference of opinion with a neighbor. In two or three other instances it manifested itself while he was slowly walking after partaking of a large meal; on two of the latter occasions he appeared exhausted, with a somewhat irregular pulse, which became regular in a very short time. The heart is not enlarged (the cardiac shadow is normal) and the radial pulse is full and regular, averaging from 60 to 78 throughout the twenty-four hours. It is negative as to murmurs. The blood pressure averages about 105 systolic, 68 diastolic; he has had low blood pressure for the last fifteen years. The cardiogram in April and June of this year, as well as in 1933, was negative. Fluoroscopic examination on various occasions revealed an abundance of gas in the stomach with a pushing up of the left side of the diaphragm. There is a history of cholecystitis with possible stones beginning in 1918 (last colic, which was never of the passing stone type, in 1929). The patient has been adhering to a strict, low fat diet and relieving the colic with rest, enemas, an ice bag and morphine. Many roentgenograms have been taken, the last one about two years ago, when the gallbladder was not visualized. The roentgenologist's report was "pathologic gallbladder." From 1918 to 1929 the patient had about fifteen attacks of dull pain about the gallbladder and on five different occasions had attacks of syncope necessitating his removal to the hospital; the attacks of 1918, 1921 and 1925 came on without warning, four or five hours after eating. When he recovered from these attacks, gastric discomfort followed by vomiting relieved him completely, and he was able to return to his usual duties within twenty-four hours. The syncopal attacks of 1929 and 1933 were not followed by vomiting, but as usual the patient was well in twenty-four hours; during his last gallbladder colic in 1929 he was jaundiced for forty-eight hours; the skin and urine cleared up in the time mentioned. The latter happened again during the latter part of the same year. He is not a drinker, never had syphilis, has normal urine, weighs (stripped) 163 pounds (74 Kg.), is 66 inches (168 cm.) high and is the picture of health.

M.D., New York.

ANSWER.—The association of myocardial disease and disorders of the gallbladder is a common one and the etiologic rôle of gallbladder disease in the production of myocardial disease has been recognized for many years. Whether this relationship obtains here can only be conjectured. In spite of negative electrocardiographic observations, frequently observed in cases of the type described, there is no question that this patient suffers from stenocardiac attacks on a myocardial basis. Anginal attacks and even coronary occlusion occur without pain, the only subjective disturbances noted by the patient being precordial pressure or severe dyspnea. Other signs elicited on examination are changes in the rate and rhythm of the pulse as already noted, and in some instances a drop in the systolic blood pressure during or immediately after an attack. Electrocardiographic evidences of myocardial disease may be found only after many years or never. Patients with severe biliary colic may faint if the pain is very intense. Rarely there may be a Stokes-Adams syndrome, but it is hardly possible that it has occurred in this case without some electrocardiographic evidence being found. It should not be difficult to offer advice for prevention of attacks, because the patient himself has noticed that overeating, exertion such as walking after eating, and emotional or gastro-intestinal upsets provoke attacks. Not infrequently cardiac attacks are associated with fulness and belching after eating, so that the condition is diagnosed as "indigestion" and the effect taken for the cause.

It is advisable for the patient to avoid overeating at any one particular meal, particularly the many course big dinners, to avoid highly spiced foods and alcoholic beverages, to rest for at least an hour or more after each meal, and under all circumstances avoid undue exertion and emotional upsets. For immediate relief of the attacks, glyceryl trinitrate tablets in 0.00065 Gm. (1/100 grain) doses should be placed under the tongue. Relief is generally obtained after one or two tablets at intervals of two minutes. Some physicians object to the drug because of lowering blood pressure with the resultant diminishing coronary flow. This objection is more academic than real. One of the methylxanthine preparations, such as aminophylline, may be given three times daily for its tendency to promote coronary flow. A combination of 1 Gm. (15 grains) of sodium bromide in 7.5 cc. (2 drachms) of rubarb and soda mixture after meals may relieve both the epigastric and the subjective cardiac distress.

Mackenzie's favorite drug for this was ammonium bromide in 1 Gm. doses taken frequently enough to keep the patient free from subjective discomfort, later decreasing the dose. Finally the question of a cholecystectomy must be considered. Should the patient have a recurrence of colic especially of the obstructive biliary type, operation may be advisable as a curative measure for the calculous condition and prophylactic for the cardiac condition.

EPIPHYSEOLYSIS

To the Editor:—In August 1934 a boy, aged 15 years, fell from his horse. He got up and walked and continued doing his usual farm work, not considering that he was badly hurt. He now states that his only sign of injury was that his leg on the inside and front of the thigh turned black and blue. A month after the fall he began to limp slightly. His lameness gradually became worse. When he came to me in April 1935 he was walking with difficulty with the aid of a crutch. He complained of pain in his knee, of pain at night after a strenuous day, and of pain in his hip if he lay on the injured side at night. The boy was fat, weighing 191 pounds (86 Kg.). His height was 65 inches (165 cm.). There is eversion of the foot on the injured right side and apparent shortening of the right leg of half an inch. Accurate measurement is difficult because of rolls of fat overlying the anterior superior spines. Flexion at the hip joint elicited pain. Roentgen examination discloses pathologic change in the head and neck of the femur, apparently a slipping of the epiphyseal end; the roentgenogram looks like an impacted fracture of the surgical neck of the femur but the clinical history does not line up well with such a diagnosis. I never have known a patient with fracture of the neck of the femur to walk for a month before going lame. Along with the foregoing I suspect endocrinism, since at 15 years of age the external genitals are almost infantile in their lack of development. I should like to have suggestions as to diagnosis, prognosis and treatment. At this time I have had the patient in bed six weeks on a reduced diet, using sand bags for supporting the leg in a comfortable position. He is now free from pain. Please omit name.

M.D., Kansas.

ANSWER.—The history justifies a diagnosis of "slipping of the proximal femoral epiphysis" or, as it has sometimes been called, "epiphyseolysis." This condition is not uncommon. Most of the patients are boys of from 13 to 15 years of age who are abnormally fat. The obesity is particularly marked about the hips, and the patients usually show retardation in sexual development. This picture is sometimes spoken of as Froelich's syndrome.

The theories regarding the etiology of the slipping of the capital epiphysis of the femur vary from one of a purely mechanical basis to that which attributes the condition to disturbances of the endocrine glands. The strain of weight bearing may be the only extrinsic factor to cause the epiphysis to begin to slip, but not infrequently a history can be obtained of minimal trauma, such as a fall that causes no immediate symptom or disability. The condition is a progressive one and unless treatment is instituted the slipping usually continues, with some bending down of the neck of the femur until there is marked deformity and disability. Occasionally the capital epiphysis will become completely detached from the neck, remaining as a loose body in the hip joint.

Regardless of what type of treatment is used, healing occurs only by the fusing of this epiphysis to the neck of the femur, thus arresting any further growth from the epiphyseal cartilage at this level. This causes little difference in leg length, since the condition itself is usually present after most of the longitudinal growth has been completed, and less than 10 per cent of the growth of the femur itself takes place from this epiphysis.

Treatment that has been most effective is complete immobilization in a plaster body and leg cast, which keeps the affected leg in a position of extreme abduction and internal rotation. The position is the same as that recommended by Whitman for fractures of the neck of the femur. Medical and dietary measures are indicated to attempt to reduce the weight, and beneficial results have been reported from the oral administration of desiccated thyroid.

The shortest period in which one can hope to obtain complete healing is from six to nine months. Roentgenograms should be taken of the opposite hip, since not uncommonly the condition is bilateral; and, if the patient is allowed to be ambulatory on

crutches with the hip that is most marked protected by a cast, slipping of the opposite capital epiphysis may occur.

The diet, besides being low in fat, should contain more than the usual amount of vitamins and calcium. There is little evidence that the addition of the inorganic salts of calcium and phosphorus are of any therapeutic value.

ERYSIPELAS

To the Editor:—I have under my care a man, aged 22, who for the past five years has had recurrent attacks of pain, swelling and redness on the anterior surface of the legs. He states that the first attack was accompanied by a chill, high fever, vomiting and headaches. These attacks occur from every two to nine months. The skin lesion occurs on either of the legs but never on the two at the same time. The constitutional symptoms have become milder with each succeeding attack. The skin lesion is a red, swollen area with elevated border and feels warm to the touch. A diagnosis of recurrent erysipelas was made and during his present attack he was given 10 cc. of erysipelas antitoxin, from which he suffered an allergic reaction a week following the injection. At present I am using ultraviolet irradiation and Parke, Davis & Co.'s Erysipelas Streptococcus Immunogen. Will you please make suggestions for further treatment? Please omit name.

M.D., Texas.

ANSWER.—Erysipelas is recognized as more than a local disease. There is a general lowered resistance to the streptococcus producing such symptoms. The use of streptococcus toxin and vaccine together in producing active immunization offers the most effective method of prevention of recurrent attacks of the disease. The streptococcus, if possible, should be obtained from the skin of the patient.

Birkhaug (Nelson Loose Leaf Medicine **1**:4490) advised injections intramuscularly every seven to ten days, with gradually increasing dosages for seven to eight weeks from a mixture of about 1,000 skin test doses of toxin and 2,000,000 killed streptococci to about 200,000 skin test doses of toxin and 100,000,000 killed streptococci. The majority are protected for two years. The persistence of immunity is determined by intradermal injections of from seven to ten skin test doses of toxin and about 10,000 killed erysipelas streptococci. If there is a red areola larger than 1 cm., the active immunization should be repeated. The test may be repeated every three months if desired.

Nonspecific protein therapy has been of value in raising the immunity, especially in the treatment of erysipelas. However, the antitoxin has been reported on most favorably with a lowered morbidity and mortality in the treatment, but no permanent immunity is given and it is not indicated in preventive treatment (Symmers, Douglas, and Lewis, K. M.: The Antitoxin Treatment of Erysipelas, THE JOURNAL, Sept. 24, 1932, p. 1082).

Fantus briefly reviewed the general treatment in THE JOURNAL, July 21, 1934. The young, the aged and debilitated individuals have a much lowered resistance to the disease. General measures are particularly important in these cases.

DERMATOMYOSITIS

To the Editor:—I have a daughter, aged 24, who has been bedfast for five months with what has been diagnosed by able men in San Francisco as dermatomyositis. As I am unable to find anything in my textbooks or in current medical literature to which I have access and as I have not been able to find out much about this trouble from the doctors I have consulted, I am asking you to cite references to me or assist me in any way that you feel that you can in ascertaining the latest and best medical light on this subject. Needless to say, I am greatly concerned as to the outcome of the case and practically in the dark as to the cause and rational therapy.

M.D., California.

ANSWER.—Dermatomyositis was described years ago and was given its name by Unverricht in 1891. It is an acute or chronic disease characterized by an insidious onset with vague symptoms such as malaise, anorexia, and pain in the back and extremities. These are followed more or less promptly by local edema, with an inflammation and degeneration of the muscles and with some form of dermatitis, eczematoid, erysipeloid, urticarial, scleroderma-like, or nodular, such as erythema multiforme or erythema nodosum. Its usual location is on the extremities.

The edema may be soft or hard and is followed by atrophy, sometimes by pigmentation. The disease is supposedly infectious, often preceded by infection of the upper respiratory tract. Bacillus coli, staphylococci, streptococci or meningococci have been found in the muscles in various cases.

The prognosis is grave. Fifty per cent of the patients die. The acute cases last only one or two weeks; the chronic ones may last as long as two and one-half years. Remissions are common, not seldom being followed by exacerbations. When recovery occurs, more or less atrophy must be expected and measures to prevent contractures should be taken early in the course of the chronic cases.

The treatment consists of rest in bed with a good diet, care of the emunctories and of the skin, but without massage.

J. C. McGarrahan (Dermatomyositis, THE JOURNAL, March 3, 1934, p. 680) made cultures from the nose and tested vaccines made from them by endermic injection. Only those made from the staphylococcus gave a positive skin reaction. The use of a mixture of three staphylococcus vaccines gave prompt improvement.

McGarrahan's case was peculiar in its eosinophilia, as high at one time as 29 per cent. Four weeks after the beginning of treatment with vaccine, it had reduced to 5 per cent and there was a corresponding clinical improvement. The high eosinophilia increased the difficulty of differentiation between dermatomyositis and trichinosis, the disease that most closely resembles it clinically. The history of eating raw pork, the stormy onset not uncommon in trichinosis, and the discovery of embryo trichinae in bits of muscle from near the attachment of a tendon should clear the diagnosis. Removal of infected teeth in McGarrahan's case had little effect. For local treatment he used dry hot flannel bandages with additional baking of the affected parts for a half hour at a time, three times daily.

W. G. Brock (Dermatomyositis and Diffuse Scleroderma, *Arch. Dermat. & Syph.* **30**:227 [Aug.] 1934) tried aminoacetic acid without effect. If desired, it can be given in doses of from 0.6 to 2.0 Gm. daily, divided into two or three doses. Brock got the greatest benefit from intravenous injections of typhoid vaccine.

Short accounts of the disease are to be found in Pusey's Dermatology, fourth edition, New York, D. Appleton & Co., 1924, in Sutton's Diseases of the Skin, ninth edition, St. Louis, C. V. Mosby Company, 1935, and in Ormsby's Diseases of the Skin, fourth edition, Philadelphia, Lea and Febiger, 1934. All these give references to articles in the literature.

Another recent article is the one by J. T. Ingram and M. J. Stewart (*Brit. J. Dermat. & Syph.* **46**:53 [Feb.] 1934).

DISORDERS OF MENSTRUATION

To the Editor:—I have a patient, aged 13 years, who has had excessive menstruation for about a year. The family history and personal history are negative except that the mother has always menstruated more than normal. About two years ago the patient began to have marked development of secondary sexual characteristics. About a year ago she stumbled while running and since has had excessive flow, to the extent of becoming very anemic and not able to be about during her menses. During the last few months she has had vomiting on the first day, with much pain following and an excessive flow. On examination the patient is normal otherwise, with first degree backward tipping of the uterus and some anemia. She has taken the usual medication and ovarian preparations without any benefit. Please advise as to treatment and probable pathologic condition. Please omit my name and address.

M.D., Kansas.

ANSWER.—This is most likely a case of functional uterine bleeding associated with hyperplasia of the endometrium. The condition is now believed to be due to a hypophyseal disturbance. The way to prove the diagnosis of hyperplasia is to perform a curettement. For this purpose the cervix need not be dilated much and only a small amount of material need be curetted out of the uterine canal. Any pathologist can readily make the diagnosis from curetted material. The curettement will also help to rule out any other possible cause of bleeding, such as an intra-uterine polyp.

Functional bleeding may occur at any time in the menstrual cycle but chiefly at the beginning and at the end of the reproductive career, when it is spoken of as the "hemorrhage of puberty" and "climacteric" or "menopausal hemorrhage" respectively. The large majority of cases are observed at the time of the menopause.

Ovarian preparations will most likely be of little avail in the treatment of this condition. In most cases of functional bleeding there is not only hyperplasia of the endometrium but also absence of functioning corpora lutea in the ovaries. The changes in the endometrium are the result of an excessive proliferation due to stimulation by an abnormal amount of estrogenic substance. To overcome this condition, Novak has recommended the use of anterior pituitary-like gonadotropic extract from the urine of pregnant women. He and others have reported encouraging results with this substance. In women at or near the menopause, one may resort to radiation therapy or to hysterectomy. In a young girl, however, efforts must be made to build up the patient's general resistance, food and drugs should

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be prescribed to combat the anemia, and the so-called anterior pituitary-like extract should be administered hypodermically. Occasionally there are spontaneous cures of functional bleeding, especially in young girls.

PILONIDAL SINUS

To the Editor:—Will you kindly inform me how to judge the extent of the incision for complete eradication of a pilonidal sinus; also landmarks, injection of dyes, and so on? Also please refer me to literature on the subject.

SIMON ENGLANDER, M.D., Cleveland.

ANSWER.—The extent of the incision may best be judged by injecting the sinus with iodized poppyseed oil and taking a roentgenogram to determine the extent of the tract. Frequently the secondary tracts extend quite far laterally, especially secondary to infection in the primary tract. A portion of the cyst wall or the sinus tract may extend into the sacrococcygeal joint or into the hiatus of the sacrum. It frequently is in close relation to the periosteum over the coccygeal segments.

At the time of the operation, the sinus or cyst is evacuated by aspiration or pressure over the sacrum. The point of the syringe is inserted into an orifice and a purse string suture tied round it. Some dye such as methylene blue or indigo carmine is injected and followed by gentle massage of the region.

A small tongue of skin over the region is excised, but the subcutaneous tissues must be widely excised underneath both sides and extending down to the periosteum and where the rudimentary sac enters or ends at the sacral hiatus. If the fascia over the sacrum and the coccyx is stained with the dye it should be removed.

Excision before infection develops is the preferable treatment, as this often produces wide tracts, which prevent good healing.

Three methods of treatment of the wound have been used after excision of the sinuses. These are packing it wide open, partial closure and complete closure. If there is recent or persistent infection, the wound should be left wide open and packed with petrolatum gauze. Some advocate leaving a small drain after obliterating all dead spaces and controlling hemorrhage carefully, while others state that no drains should ever be left. If a drain is inserted it should be at the upper angle of the wound, as it is farther from the anus and there is less danger of infection.

If primary closure is done, a flap is swung over from one side to close the defect. The flap is anchored to the fascia over the sacrum and closed carefully in layers. The lateral incision is closed transversely for about a third of the distance.

Following are references to the literature:

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Rogers, Horatio: Pilonidal Sinus, *Surg., Gynec. & Obst.* **57:** 803 (Dec.) 1933.
Stone, H. B.: Pilonidal Sinus, *Ann. Surg.* **79:** 410 (March) 1924.
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UREA TEST IN URINALYSIS

To the Editor:—Kindly give me your opinion as to the advisability of including the qualitative and quantitative urea test in a twenty-four hour urine specimen. Is it considered necessary in the ordinary routine examination of patients to include this with the microscopic and the other chemical tests?

J. W. HOPKINS, M.D., Glendale, Calif.

ANSWER.—In itself the estimation of urea in the urine is not of much diagnostic value, because its concentration is increased when much food is taken and diminished by a low protein diet. Liver diseases lessen its formation. Advanced renal disease lessens its excretion.

Urea is the chief organic constituent of the urine and its most important nitrogen waste product. Urea represents from 80 to 90 per cent of the total nitrogen of the urine. The amount of urea excreted varies under normal conditions between 20 and 40 grams in twenty-four hours. As urea is the most abundant solid of urine, it influences the specific gravity most. The specific gravity runs quite parallel to the amount of urea. The last two figures of the specific gravity give a fair estimate of the urea content, provided there is no sugar and the chlorides are normal; 1.020 conforms with the presence of 2 per cent of urea, 1.016 with 1.6 per cent, and so on. When a twenty-four hour specimen is obtainable, the urea should be determined by the best and simplest clinically available method, the hypobromite method. For all clinical purposes the hypobromite method introduced by Knop, with the Doremus ureometer, is sufficient. For accurate scientific work more elaborate methods are necessary, of which that of Mörner and Sjöqvist gives the most accurate results. Another method is that of Van Slyke and Cullen, which consists in treating the urine sample with urease, aerating the ammonia formed into fiftieth-normal acid and titrating back the excess acid.

The quantitative urea test performed by the hypobromite method is so simple that it may well be included in the routine examination of twenty-four specimens of urine.

DELAYED HEALING OF BRUISE

To the Editor:—I have a woman patient who severely bruised her leg three months ago. The area was black and blue for about a month and then gradually cleared up. At present the calf is very much enlarged and firm and painful. Roentgen examination shows a mottled appearance of the muscle of the calf and a somewhat moth-eaten appearance of the edge of the tibia. I have not encountered a condition like this before. Will you please advise me concerning this and what the treatment should be? Please do not publish my name.

M.D., Illinois.

ANSWER.—One is often surprised at how long it takes for a subcutaneous and subfascial extravasation of blood and serum to be absorbed and for the induration of the infiltrated tissues to disappear. This is particularly true if the part involved is in a lower extremity below the knee, where the constantly dependent position permits the action of gravity constantly to retard the return flow of blood.

It is not uncommon for the bones of the leg to show a "moth-eaten" appearance if the patient is beyond middle age and especially if varicosities of the veins are present. Such an appearance, however, does suggest the importance of making a Wassermann test and ruling out the presence of a syphilitic infection.

In the absence of a specific infection or a focus of low grade infection in the teeth or tonsils that could produce a metastatic inflammatory process at the site of injury, the treatment indicated would be rest, elevation of the limb for a part of each day, use of an elastic pressure bandage when the patient is up and about, and the use of warm applications for from half an hour to an hour twice daily while the leg is elevated, so as to stimulate circulation and favor acceleration of the venous return. The treatment that by all means should be avoided is any type of open operation with the associated risk of adding trauma and infection from the outside.

POSSIBLE USE OF OPTOCHIN IN URETER

To the Editor:—In a case in my family there is a chronic inflammation of the lower third of the left ureter, almost entirely extravesical, following infection of the maxillary sinuses with streptococci and pneumococci. Both sinuses were opened, the granulation tissue was cleaned out, and the results were excellent. But the infection of the ureter followed, possibly through lymph channels opened at operation. Now the streptococci are all gone, formerly being present in long chains, and only pneumococci are obtained by urethral catheter or the bladder urine. Since infection of the eye yields promptly to optochin, 1 per cent solution, would it be safe to irrigate the ureter with the same or a little weaker? Has such internal use of optochin been made? What else would you advise? Certain medicinal dyes by mouth and mercurochrome locally partly control but do not destroy the pneumococci; they return after a brief interval and the exudate from the presumably shallow ulcer, pus and fibrin, block the ureter and cause severe colic.

M.D., Texas.

ANSWER.—We have not heard of optochin being used locally in the ureter. What evidence is there that there is a localized infection of the ureter? This is most unusual. If a definite narrowing has been demonstrated at this point by ureteral pyelography, dilation should correct the trouble. It is difficult to believe that any local application of an antiseptic could be of much benefit.

TREATMENT OF SYPHILIS

To the Editor:—A man in the early sixties was found to have a positive Wassermann reaction as a result of a routine test. Physical examination is quite negative save for a sluggish pupil. He cannot remember the time of infection but believes that it was many years ago. How vigorous a course of antisyphilitic therapy should such a man be exposed to? Could you outline a safe regimen? Please omit name.

M.D., New York.

ANSWER.—The question of just how intensive treatment should be for this patient is dependent on the status of his syphilis. The sluggish pupil suggests the possibility of neurosyphilis, which possibility could be determined by an examination of the spinal fluid. In a man aged 60 or more such an examination is not always advisable, but if his physical condition is otherwise good or if he is young for his years there can be no serious objection to an examination of the spinal fluid. The report of

this test would be a potent factor in determining subsequent treatment. Examination of the cardiovascular system should likewise be made to make certain that the patient does not have a syphilitic aortitis. If the spinal fluid and cardiovascular examinations are negative and there are no other signs of syphilis, little if any treatment is necessary in a person aged 60 or more in whom the infection is of many years' duration. In such a patient occasionally the use of mercury and small doses of potassium iodide by mouth is ample. If the spinal fluid examination is positive, however, treatment with arsphenamine and a bismuth preparation should be given. The dose of arsphenamine should be small, 0.5 Gm. of neoarsphenamine being the maximum dose. Following the first course of arsphenamine and the bismuth compound, subsequent treatment should be directed toward symptomatic relief. Further serologic reexaminations, both of the blood and of the spinal fluid, should be dependent entirely on the patient's response to treatment.

IMPROVEMENT IN DIABETES UNDER DIGITALIS

To the Editor:—A woman, aged 55, has had diabetes for twelve years and requires 24 units of insulin daily with a careful diet. Following large doses of tincture of digitalis, which were begun in February, the urine became sugar free. This was first noticed by the patient's husband early in March. The patient is now eating normally without restriction of carbohydrates. The urine, without insulin and with daily examinations, continues to remain sugar free. Have you any record of similar cases so responding to digitals?

J. T. STEELE, M.D., Dunsmuir, Calif.

ANSWER.—We know of no similar case that has responded to digitalis in the manner described. Nor do we know of any reasonable explanation for what occurred unless the doses of digitalis were so large as to impair hepatic function.

It must be kept in mind that the improvement of the diabetes may be consequent to the heart failure, which presumably occasioned the administration of the digitalis, rather than to the drug itself. Cases have been reported in which diabetes has improved or disappeared as a coincident liver cirrhosis progressed. It is possible that in this case the period of passive hyperemia of the liver caused by the heart failure was enough to aggravate a previously existent mild hepatic cirrhosis.

If this explanation is correct (and it is only a guess at an otherwise inexplicable phenomenon), the improvement in the diabetes indicates a poor prognosis rather than an improvement. Undue sensitivity to insulin or the future occurrence of hypoglycemic attacks would corroborate this interpretation.

SHORTEST PROCESS OF LABOR

To the Editor:—According to statistics what is the shortest time that it has taken a primipara at full term to go through the three stages of labor, all conditions normal, giving birth to a live and normal baby? Please omit name.

M.D., Arizona.

ANSWER.—Statistics regarding the length of labor are not reliable, because it is hard to determine when labor actually begins. Numerous cases are on record in which the baby was born within an hour after the first suggestion of pains, but it is more than probable that what the French call "insensible labor" had been going on for some time previously. Precipitate labors, occasionally with fatal results, have taken place within an hour, and several cases have had to be the subject of legal investigation to eliminate the suspicion of foul play. The shortest labor on record at the Chicago Lying-in Hospital was one hour and ten minutes for the three stages. The patient was a primipara, 41 years of age, but in all probability she had had preparatory pains and considerable dilatation before she became aware that labor had begun.

BLOOD CHOLESTEROL AND METABOLISM

To the Editor:—I would greatly appreciate information on the value and interpretation of blood cholesterol values. A version given me is that it can be used as an indication of metabolism as basal metabolism is.

L. EDWARD GIOVINE, M.D., Flushing, N. Y.

ANSWER.—The normal limits of blood cholesterol may be considered to be between 120 and 200 mg. per hundred cubic centimeters. There may be wide and rapid fluctuations even during fasting. The intake of large quantities of butter, eggs and meat for several weeks increases the blood cholesterol. There is an increase of blood cholesterol in about 50 per cent of pregnant women in the latter half of pregnancy. Low values occur in hyperthyroidism, fevers, anemias, cachexias and uremia.

High values are found in chronic nephrosis and acute nephritis. The highest values occur in pure nephrosis. There is often an increase in the early stages of malignant growths. Biliary obstruction causes an increase unless there is a marked infection or cachexia. In myxedema and hypothyroidism the blood cholesterol varies from 250 to 750 mg. per hundred cubic centimeters of blood and is of value in diagnosis. There is an increase in diabetes mellitus with a faulty fat metabolism. A persistently high value indicates a bad prognosis. According to Rabinowitch the cholesterol is a more consistent guide to the patient's condition than the blood sugar. In lipemia of diabetes the cholesterol may be four times the normal. Insulin and dextrose cause a rapid reduction. A high blood cholesterol occurs in fasting when the body mobilizes its fat reserves for fuel. The reticulo-endothelial system plays an important part in cholesterol metabolism.

FIBRO-ADENOMA OF BREAST IN A GIRL

To the Editor:—A girl, aged 10 years, had a small tumor in the right breast about the size of a walnut. This was removed and a section showed it to be an adenofibroma, which contained some dilated ducts. Several months later a mass developed in the left breast which is similar to the one that was in the right breast. This has gradually increased until it is about the size of a chicken egg. Should this tumor be removed, or, if not, what treatment should she have? The breasts are undeveloped. Please omit name.

M.D., Michigan.

ANSWER.—Five per cent of all benign fibro-adenomas of the breast are found under the age of 15 or before the onset of menstruation. Sixteen per cent of these benign tumors are multiple and of these multiple tumors one third occur bilaterally with or without an interval of time intervening between the appearance of the tumors. No immediate operation is indicated because of the bilaterality and multiplicity of these tumors. There is no reliable method for their cure except surgery, but in this instance the expectant treatment might be used, normal breast development being awaited before further surgery is attempted. There is no danger of malignant change at this age, although doubling or tripling the size of the tumor in a short period would justify its removal. The endocrine balance in this patient should right itself when menstruation is established and the object should be to delay treatment until then.

PAGET'S DISEASE

To the Editor:—I have a patient who has been carrying a slight daily fever of a degree or two. The pulse ranges from 88 to 96. Pains and aches occur in the upper part of the body (chest area posteriorly and anteriorly). Some loss of weight has occurred. The spine over the cervical area is bent forward somewhat. When the patient walks he walks wide and flat footed to a degree rather marked. The blood shows 3,200,000 red blood cells and 56 per cent hemoglobin. The urine is normal. Paget's disease of the bone was found in the pelvis on roentgen examination. Will you tell me the best line of treatment to pursue? Please omit name.

M.D., Rhode Island.

ANSWER.—There is no specific medical treatment, and parathyroidectomy is not indicated in Paget's disease. The best that can be done is to treat the symptoms and to make sure that such treatment does not do harm.

SUTURE DEVICES IN TONSILLECTOMY

To the Editor:—Is there an instrument on the market which mechanically and simply sutures bleeding points in the tonsillar fossae following tonsillectomy? May I have any information that you have on the subject?

DAVID MEZZ, M.D., Brooklyn.

ANSWER.—There are a number of instruments which mechanically and more or less simply carry a suture through the tissues of the tonsillar fossa and beneath the bleeding point. Having carried the catgut strand through by means of the instrument, the operator must then tie the ligature himself. Any of the large surgical houses will supply information as to the names, and manner of use of instruments of this character.

OSMOTHERAPY

To the Editor:—Hypertonic dextrose in 50 per cent solution has been prescribed in 20 cc. doses twice weekly for repeated intravenous use in scalp and skin infections. Is there not an appreciable element of danger in producing occlusion of the veins and a thrombus? What is the theory of this treatment?

M.D., Michigan.

ANSWER.—There is danger of damage to the veins, which can be minimized by very slow injection. This is a form of "osmotherapy," depending for its effect on the upsetting of the delicate osmotic and colloidal balance of the blood and tissue fluids, which may result in an alteration of metabolic processes and a possible stimulation of resistance and repair.

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935

Medical Examinations and Licensure

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY: *Written examination for Group B applicants* will be held in various cities throughout the country, March 14. *Oral examination for Group A and B applicants* will be held in Kansas City, Mo., May 11-12. *Applications for written examination should be filed with the secretary before Jan. 15.* Sec., Dr. C. Guy Lane, 416 Marlboro St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, Dec. 7. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh (6).

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: St. Louis, Jan. 11. Sec., Dr. Fremont A. Chandler, 180 N. Michigan Ave., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City, Mo., May 9. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: New York, Dec. 30. Sec., Dr. Walter Freeman, 1726 Eye St., N. W., Washington, D. C.

AMERICAN BOARD OF RADIOLOGY: Detroit, Dec. 1-2. Sec., Dr. Byrl R. Kirklin, Mayo Clinic, Rochester, Minn.

ARIZONA: *Basic Science.* Tucson, Dec. 17. Sec., Dr. Robert L. Nugent, Science Hall, University of Arizona, Tucson.

CALIFORNIA: *Reciprocity.* Los Angeles, Dec. 4. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Jan. 7. Sec., Dr. Harvey W. Snyder, 422 State Office Bldg., Denver.

CONNECTICUT: *Endorsement.* Hartford, Nov. 26. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden.

KANSAS: Topeka, Dec. 10-11. Sec., Board of Medical Registration and Examination, Dr. C. H. Ewing, 609 Broadway, Larned.

KENTUCKY: Louisville, Dec. 3. Sec., Department of Health, Dr. A. T. McCormack, 532 W. Main St., Louisville.

MARYLAND: *Medical (Regular).* Baltimore, Dec. 10-13. Sec., Dr. John T. O'Mara, 1211 Cathedral St., Baltimore. *Medical (Homeopathic).* Baltimore, Dec. 10-11. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MINNESOTA: *Basic Science.* Minneapolis, Jan. 7-8. Sec., Dr. J. C. McKinley, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Basic Science.* Omaha, Jan. 7-8. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NORTH CAROLINA: *Endorsement.* Raleigh, Dec. 9. Sec., Dr. Ben J. Lawrence, 503 Profesional Bldg., Raleigh.

NORTH DAKOTA: Grand Forks, Jan. 7-10. Sec., Dr. G. M. Williamson, 4½ S. 3d St., Grand Forks.

OHIO: Columbus, Dec. 3-5. Sec., State Medical Board, Dr. H. M. Platter, 21 W. Broad St., Columbus.

OKLAHOMA: Oklahoma City, Dec. 11. Sec., Dr. James D. Osborn Jr., Frederick.

TENNESSEE: Memphis, Dec. 18-19. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

UTAH: Salt Lake City, Dec. 10-12. Dir., Department of Registration, Mr. S. W. Golding, 326 State Capitol Bldg., Salt Lake City.

VIRGINIA: Richmond, Dec. 11-13. Sec., Dr. J. W. Preston, 28½ Franklin Rd., Roanoke.

WISCONSIN: *Basic Science.* Milwaukee, Dec. 21. Sec., Prof. Robert N. Bauer, 3414 W. Wisconsin Ave., Milwaukee. *Medical.* Madison, Jan. 7-10. Sec., Dr. Robert E. Flynn, 410 Main St., LaCrosse.

Pennsylvania July Examination

Mr. W. M. Denison, director, Bureau of Professional Licensing, reports the examination held by the Pennsylvania State Board of Medical Education and Licensure at Philadelphia and Pittsburgh, July 9-11, 1935. Four hundred and twenty-four candidates were examined, of whom 418 passed and 6 failed. The following schools were represented:

School	PASSED Year Grad.	Number Passed
Yale University School of Medicine	(1933)	1
George Washington Univ. School of Med.	(1933), (1934, 3)	4
Georgetown University School of Medicine	(1934, 23)	23
Howard University College of Medicine	(1934, 3)	3
Emory University School of Medicine	(1932)	1
University of Georgia School of Medicine	(1934)	1
Loyola University School of Medicine	(1935)	1
University of Louisville School of Medicine	(1933)	1
Tulane Univ. of Louisiana School of Medicine	(1933), (1934)	2
Johns Hopkins University School of Medicine	(1932), (1934)	2
University of Maryland School of Medicine and College of Physicians and Surgeons	(1934, 7)	7
Boston University School of Medicine	(1931)	1
Harvard University Medical School	(1933)	1
University of Michigan Medical School	(1934)	1
St. Louis Univ. School of Medicine	(1911), (1932), (1934, 8)	10
University of Nebraska College of Medicine	(1934)	1
Cornell University Medical College	(1934)	1
University of Buffalo School of Medicine	(1920)	1
University of Rochester School of Medicine	(1933), (1934, 2)	3
Ohio State University College of Medicine	(1933), (1934)	2
Western Reserve University School of Medicine	(1934, 3)	3
University of Oklahoma School of Medicine	(1921)*	1
Hahnemann Medical College and Hospital of Philadelphia	(1933, 13), (1934, 38)	51
Jefferson Medical College of Philadelphia	(1932, 2), (1933, 22), (1934, 54)	78
Medico-Chirurgical College of Philadelphia	(1915)*	1
Temple Univ. School of Med.	(1933, 9), (1934, 67), (1934)*	77
University of Pennsylvania School of Medicine	(1931), (1932, 2), (1933, 18), (1934, 33)	54
University of Pittsburgh School of Medicine	(1934, 61)	61
Woman's Medical College of Pennsylvania	(1932), (1933, 2), (1934, 5)	8
Vanderbilt University School of Medicine	(1934, 2)	2
Medical College of Virginia	(1934, 2)	2
University of Wisconsin Medical School	(1934)	1
University of Toronto Faculty of Medicine	(1907)	1
University of Western Ontario Medical School	(1934, 2)	2
McGill University Faculty of Medicine	(1931)	1
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1926)†	1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1934)	1
Universität Heidelberg Medizinische Fakultät	(1923)	1
Universität Leipzig Medizinische Fakultät	(1931)†	1
Magyar Királyi Pázmány Petrus Tudományegyetem Orvosi Fakultasa, Budapest	(1929)	1
Licentiate of the Royal College of Physicians of Edinburgh and of the Royal College of Surgeons of Edinburgh	(1933, 2)	2
University of Edinburgh Faculty of Medicine	(1926)	1

School	FAILED Year Grad.	Number Failed
Georgetown University School of Medicine	(1933), (1934)	2
St. Louis University School of Medicine	(1934)	1
Hahnemann Medical College and Hosp. of Philadelphia	(1934)	1
University of Pittsburgh School of Medicine	(1934, 2)	2

Twenty-two physicians were licensed by reciprocity and 15 physicians were licensed by endorsement from January 1 through August 28. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
Howard University College of Medicine	(1932)	Georgia
Loyola University School of Medicine	(1934)	Illinois
Northwestern University Medical School	(1934)	Illinois
Rush Medical College	(1933)	Louisiana
Johns Hopkins University School of Medicine	(1930), (1932)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons	(1929)	N. Carolina, (1932), (1934) Maryland
Boston Univ. School of Medicine	(1911) New Hamp., (1931)	Mass.
Tufts College Medical School	(1906)	Mass.
University of Michigan Medical School	(1929), (1930)	Michigan
St. Louis University School of Medicine	(1932)	Missouri
University of Cincinnati College of Medicine	(1929)	Ohio
Western Reserve University School of Medicine	(1932)	Ohio
Hahnemann Med. College and Hosp. of Philadelphia	(1933)	Washington, (1934) New Jersey
Jefferson Medical College of Philadelphia	(1928)	New Jersey
Temple University School of Medicine	(1933)	New Jersey
Vanderbilt University School of Medicine	(1931)	Tennessee

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Yale University School of Medicine	(1933)	N. B. M. Ex.
Howard University College of Medicine	(1934)	N. B. M. Ex.
University of Minnesota Medical School	(1931), (1935)	N. B. M. Ex.
University of Buffalo School of Medicine	(1931)	N. B. M. Ex.
Hahnemann Medical College and Hospital of Philadelphia	(1923)	N. B. M. Ex.
Jefferson Medical College of Philadelphia	(1932)	N. B. M. Ex.
Temple University School of Medicine	(1934)	N. B. M. Ex.
Univ. of Pennsylvania School of Med.	(1932, 2), (1934)	N. B. M. Ex.
University of Pittsburgh School of Medicine	(1930)	U. S. Army
Woman's Medical College of Pennsylvania	(1933, 2)	N. B. M. Ex.
University of Wisconsin Medical School	(1932)	N. B. M. Ex.

* License has not been issued.
† Verification of graduation in process.

Ohio Reciprocity and Endorsement Report

Dr. H. M. Platter, secretary, Ohio State Medical Board, reports 33 physicians licensed by reciprocity and 4 physicians licensed by endorsement on Oct. 5, 1935. The following schools were represented:

School	LICENSED BY RECIPROCITY Year Grad.	Reciprocity with
University of Arkansas School of Medicine	(1933), (1934)	Arkansas
College of Medical Evangelists	(1934)	Maryland
Howard University College of Medicine	(1933)	Maryland
Emory University School of Medicine	(1934)	Georgia
Illinois Medical College, Chicago	(1903)	Indiana
Indiana University School of Medicine	(1934, 2)	Indiana
State University of Iowa College of Medicine	(1932)	Iowa
University of Louisville School of Medicine	(1934)	Kentucky
Johns Hopkins University School of Medicine	(1922)	Michigan
University of Michigan Medical School	(1928), (1931), (1932), (1933), (1934, 2)	Michigan
Wayne University College of Medicine	(1934)	Michigan
St. Louis University School of Medicine	(1933), (1934, 2)	Missouri
University of Nebraska College of Medicine	(1930)	Nebraska
University of Buffalo School of Medicine	(1934)	New York
Duke University School of Medicine	(1933)	N. Carolina
University of Cincinnati College of Medicine	(1931)	Indiana
Hahnemann Med. College and Hospital of Philadelphia	(1934)	Penna.
Jefferson Medical College of Philadelphia	(1928)	Penna.
University of Pennsylvania School of Medicine	(1932)	Penna.
University of Pittsburgh School of Medicine	(1931)	Penna.
Vanderbilt University School of Medicine	(1930), (1934)	Tennessee
Medical College of Virginia	(1927)	Virginia
Queen's University Faculty of Medicine	(1930)	New York

School	LICENSED BY ENDORSEMENT Year Grad.	Endorsement of
Rush Medical College	(1935)	N. B. M. Ex.
Harvard University Medical School	(1933)	N. B. M. Ex.
Columbia Univ. College of Physicians and Surgeons	(1931)	N. B. M. Ex.
McGill University Faculty of Medicine	(1933)	N. B. M. Ex.

South Dakota July Examination

Dr. Park B. Jenkins, director, Division of Medical Licensure, reports the written and practical examination held by the South Dakota State Board of Health and Medical Examiners at Rapid City, July 16-17, 1935. The examination covered 14 subjects and included 115 questions. An average of 75 per cent was required to pass. Fourteen candidates were examined, all of whom passed. Three physicians were licensed by reciprocity and 1 physician was licensed by endorsement. The following schools were represented:

School	Year Grad.	Per Cent
PASSED		
Rush Medical College	(1934)	85, 86
University of Louisville School of Medicine	(1934)	86
Tulane University of Louisiana School of Medicine	(1922)	81
University of Minnesota Medical School	(1932) 88, (1935)	85
Kansas City College of Medicine and Surgery, Missouri	(1921)	78
Creighton University School of Medicine	(1933) 84, (1934) 80, 84,	85
University of Nebraska College of Medicine	(1928) 80, (1934)	88
University of Pittsburgh School of Medicine	(1934)	81

School	Year Grad.	Reciprocity with
LICENSED BY RECIPROCITY		
Creighton University School of Medicine	(1933)	N. Dakota, Ohio, Oklahoma

School	Year Grad.	Endorsement of
LICENSED BY ENDORSEMENT		
Johns Hopkins University School of Medicine	(1927)	N. B. M. Ex.

Book Notices

Diseases of the Chest. By J. Arthur Myers, M.D., Professor of Medicine, University of Minnesota Medical School. National Medical Monographs. Edited by Morris Fishbein, M.D. Cloth. Price, $3. Pp. 385, with 62 illustrations. New York: National Medical Book Company, Inc.: Doubleday, Doran & Co., Inc., 1935.

The writer in his preface states that our knowledge of diseases of the chest has increased so materially during the last ten years that much of what was written on the subject a decade ago is already obsolete. This increased knowledge has revolutionized methods of diagnosis, treatment and prevention. The x-ray film, the bronchoscope and the microscope are today the indispensable armamentarium of every physician who wishes to make a correct diagnosis of a pulmonary disease. The film locates and outlines the extent of disease, the bronchoscope visualizes a lesion and makes it possible to remove foreign bodies, secretions or tissue for biopsy, and the microscope is the "court of last appeal" in revealing the etiology of the condition. However, a careful history and physical examination are still the fundamental basis for the physician's diagnosis of disease.

The book discusses the first infection type of tuberculosis, followed by a discussion of the tuberculin test in diagnosis. The percentage of positive reactors is steadily decreasing, until at present only about 30 per cent of college students and 15 per cent of high school students react positively. Then comes discussion of the roentgen examination in the diagnosis of tuberculosis of the first infection type. Myers advises periodic x-ray films of the chests of all children reacting positively to the tuberculin test. Chapter 4 deals with the examination and classification of tuberculosis of the first infection type. A history of exposure or the presence of an erythema nodosum is of great significance. On physical examination there is often no evidence of disease. Sputum is usually not obtainable, but a swab of the larynx and pharynx or the stomach contents may reveal tubercle bacilli. A classification is given for cases of this type. Chapter 5 discusses the treatment, prognosis and prevention of the first infection type.

Part II begins with chapter 6, on reinfection foci, endogenous and exogenous. Then follows a chapter on the acute forms of reinfection tuberculosis, such as miliary tuberculosis, meningitis, pneumonia and pleurisy. In chapter 8 the chronic reinfection types of pulmonary tuberculosis are considered. They are classified into minimal, moderately advanced and far advanced lesions. The next chapter discusses treatment. Chapter 10 is an excellent discussion of pneumothorax, giving the technic, indications and results, with some fair roentgenograms. Chapter 11 treats the subject of surgery of the chest wall, and chapter 12 the interruption of the phrenic nerve. The last chapter on tuberculosis discusses the magnitude of the problem today.

Part III contains chapter 14, on nontuberculous diseases of the chest, and begins with the subject of pneumonia. Thirty pages are devoted to lobar pneumonia and bronchopneumonia. The next chapter is devoted to suppurative conditions of the bronchi, lungs and pleura. Chapter 16 considers tumors within the thorax. It is to be regretted that only nine pages are devoted to primary carcinoma of the lung, and only six lines to the physical observations in this disease, which today ranks second only to gastro-intestinal malignancy in frequency. A few lines are devoted to sarcoma, endothelioma and mediastinal growths. Chapter 17 discusses massive collapse, foreign bodies, spontaneous pneumothorax and embolism. Chapter 18 presents seven pages on pulmonary diseases due to moldlike bacteria, molds and yeastlike fungi. The next chapter describes diseases caused by inhalation of dust, such as hay fever, bronchial asthma and pneumoconiosis. There is an excellent chapter on silicosis.

Each chapter is followed by a brief list of references for those who desire more detailed information. There is an alphabetical index of twenty pages. For the medical student and the practicing physician, this book has presented the status of our present knowledge of the more important chest diseases.

International Narcotics Control. By L. E. S. Eisenlohr. Cloth. Price, $4. Pp. 295. London: George Allen & Unwin, Ltd., 1934.

According to its preface, "this book is concerned with dangerous drugs solely as a subject of international administration." A great deal of work has obviously been devoted to the preparation of the book, but it is unfortunate that not more attention was given to accuracy and that the subject was not presented in complete and well balanced form. The book is highly theoretical and frequently inaccurate. By its omissions it produces a poorly balanced and somewhat distorted view of the situation. Its sophomoric pronouncements will not impress those familiar with the problem.

The discussion overemphasizes opium and the opium derivatives, pays little attention to the coca leaf and cocaine, and hardly mentions cannabis, although all these three classes of dangerous drugs have been the subject of international control, to the further strengthening of which increasing study is now being given throughout the world. Opium production in India and the Near East receives extended treatment. The situation in China, which produces about 90 per cent of the world total, receives scant attention.

Under the book's title of international control the author makes the statement that international control does not exist and proceeds, with airy disregard of actualities, to argue in support of a vague and impracticable proposal to supply the needs of the entire world for narcotic drugs from a single international factory under control of and operated by the League of Nations, to draw its raw material from three or four poppy farms, nothing being said as to the coca leaf supply.

The book is confined almost entirely to the activities of the League of Nations and of the Permanent Central Opium Board in the field of narcotic control, treats the Supervisory Body, which is entirely independent and the most powerful organ functioning in international narcotic administration, as a sort of minor committee of the Permanent Central Opium Board, and shows an almost total ignorance of the extensive practical and direct collaboration in these matters that has existed entirely outside the league for many years and has accomplished as much if not more than has the league. The collaboration of the United States and other nations not members of the league, without which no progress could have been made, is barely mentioned. In fact, the book gives the United States little or no credit for its work toward international cooperation to suppress the abuse of narcotic drugs and entirely omits mention of the consistent American effort to keep to the fore the question of limitation of the production of raw materials. The few references to the United States are inaccurate and misleading.

Although police preventive work is one of the most important factors in the international control of narcotic drugs, the author plainly knows little of the organization of international police work in this field and has apparently based wide speculation on a few published league documents. Fault is found with the Opium Advisory Committee for not handling police work, and the author presents with apparent seriousness the naive idea

that the league secretariat could effectively supervise and conduct an interchange of police information concerning the illicit traffic, a function for which it is neither suited nor equipped and which it is not and cannot legally be authorized to perform.

As examples of inaccuracy in regard to the police side of the question, it may be pointed out that the book in listing governments definitely in a position to offer direct international police cooperation omits Canada and France, two of the most important and most active. Statements in the book in regard to specific cases of illicit traffic are mostly incorrect and misleading.

Inaccuracies in regard to existing administration include the statement that only three countries have abandoned the use of diacetylmorphine (heroin), whereas in July 1934, when the book was written, the use of this drug had already been abandoned or prohibited in nine countries.

The book discusses the two international boards that have executive and administrative functions under the drug treaties, the Supervisory Body and the Permanent Central Opium Board, but treats them as merely organs of the League of Nations. They are declared by the treaties that created them to be entirely independent of the league, and it is to this independence that they owe the cooperation of governments which has enabled them to function so effectively. Another inaccuracy is the statement that a representative of the United States participated in the selection of the first members of the Permanent Central Opium Board. It was not until five years later, when the independence of that body had been proved and well established, that the American government participated in the selection of its members.

On the basis of a total misconception of the nature and functions of the League Opium Advisory Committee, the work of that body is subjected to a most incomplete and unfair analysis. All its faults and errors—and they are not few—are emphasized, whereas its accomplishments are minimized or ignored.

Public Health Administration in the United States. By Wilson G. Smillie, A.B., M.D., Dr.P.H., Professor of Public Health Administration, School of Public Health, Harvard University. Cloth. Price, $3.50. Pp. 458, with 23 illustrations. New York: Macmillan Company, 1935.

A clarification and summary of public health administrative practices in the United States has long been needed. Rosenau's Preventive Medicine and Public Health has been a scientific textbook in this field, as have the numerous contributions by Chapin, particularly Sources and Modes of Infection. The appraisal forms developed by the Committee on Administrative Practice of the American Public Health Association have given a skeletonized picture of what is being done, but it has remained for the author of this textbook to give a comprehensive summary of practices in official public health work and voluntary public health work and the relationship of these to the practicing physician. The book is comprehensive and complete and at the same time sufficiently concise so that its size is kept within reasonable bounds. The author has maintained a judicial attitude and has fairly set forth the advantages and disadvantages of various sorts of organization and different types of administrative practice. His proposed budgets are much more in line with reasonable possibilities in communities as they exist than those formerly proposed by Winslow. The author disclaims any pretension of presenting a philosophy of public health and yet he has done so in simply setting forth his opinions as to various practices. His chapter on the practicing physician and the public health department is particularly good. In this he takes the reasonable stand that the health officer has his duty to perform in protecting his community against disease and in the promotion of public health and that he ought to recognize that certain services are best performed by the practicing physician. On the other hand, he warns the physician that failure to accept his share of the responsibility or to meet opportunities in preventive medicine will place on the health officer the obligation to do what is necessary for the protection of the public health. He emphasizes over and over again that the relationship between health officer and practicing physician should be "one of mutual assistance and mutual advantage" and that "no health officer can carry on satisfactory work without the cooperation and whole hearted support of the organized medical profession of his community. No physician can practice modern medicine in an effective way without the aid of a well organized, effective health department. The dependence of one on the other is mutual and success is contingent upon mutual understanding and confidence."

Silicosis and Tuberculosis: Observations on the Origin and Character of Silicotic Lesions as Shown in Cases Occurring on the Witwatersrand. By F. W. Simson, M.B., Ch.B., and A. Sutherland Strachan, M.A., B.Sc., M.D., Department of Pathology, The South African Institute for Medical Research, Johannesburg. Publications of the South African Institute for Medical Research, No. XXXVI (Vol. VI). Paper. Pp. 367-405, with 14 illustrations. Johannesburg: South African Institute for Medical Research, 1935.

During the years 1926 to 1933 inclusive, the lungs of 4,910 diseased South African miners and native laborers were examined by the authors. This number includes many persons who in life suffered from varying degrees of silicosis. The objective of the investigation was to develop evidence relative to a controversy, the points of issue of which are here taken from the authors' introduction.

"Can the nodular fibrosis which is recognized as the characteristic lesion in silicosis be produced as a simple response of the lung tissue to the presence of silicious dust?" or

"Is an element of tuberculosis always necessarily present in the original development of the lesions?"

The accumulated evidence is grouped into three sections, designated by the authors respectively as "The Histology of Silicotic Lesions from the Lungs of Diseased Gold Miners," "Results of Inoculation into Guinea-Pigs of Silicotic Lesions from the Lungs of Deceased Gold Miners," and "Preliminary Observations on the Mineral Residues Extracted from Silicotic Lungs." From their personal investigation and from their appraisal of pertinent literature, the authors accept an affirmative answer to the first question; namely, that silicosis may develop in the lung without the necessity of tuberculosis as contributory to the original development of the lesions. They do, however, recognize the high frequency of an infective factor and point out that with the naked eye it is possible to distinguish between "simple" and "infective" lesions. The authors submit that their accumulated evidence demonstrates:

"That the retention in the lung of silicious dust is a necessary precursor to the development of silicosis, whether in its 'simple' or its 'infective' form, and that the amount of retained dust determines the degree of the silicotic process which follows."

"That, although some silicotic lesions are infective from the outset, in very many other lesions no evidence whatever of the influence of an infective factor is found, either at their origin or in their further progress. The latter lesions appear to be the outcome of a distinctive pathological reaction of the lung tissue to the presence of the retained silicious dust."

This publication reflects still further credit on the South African group of workers in dusty lung diseases. A carefully prepared brochure, presented with admirable restraint, it carries conviction that at least in the Witwatersrand district the pathology of silicosis is as described in this highly technical but no less engaging booklet.

Handbook of Physiology. By the late W. D. Halliburton, M.D., L.L.D., F.R.C.P., and R. J. S. McDowall, M.B., D.Sc., F.R.C.P., Professor of Physiology, University of London, King's College. Thirty-fourth edition. Cloth. Price, $5.50. Pp. 971, with 386 illustrations. Philadelphia: P. Blakiston's Son & Co., Inc., 1935.

This volume is now in its thirty-fourth edition. The last edition was published in 1933. The present edition, like the others since 1928, is under the editorship of R. J. S. McDowall. The author points out that physiology has now developed such a tremendous fund of information that it is not possible for any medical student to acquire in the time at his disposal anything but a fraction of what is available. For this reason the present edition of Halliburton's book publishes in dark type numbers which the student ought to memorize as he goes along. Moreover, blank pages are provided at the end of the various chapters for the notes of the lectures given by individual instructors. The book has been kept quite up to date in all its editions and obviously needs no special recommendation. To the present edition the publisher adds an interesting historical note pointing out that the first edition of this book was developed by Kirkes in 1848, making a book of 705 pages with ninety-seven illustrations. The fourth edition (1860) carried the name of Mr.

Savory; the sixth edition, that of Mr. Baker. Successive editions included the 1876 edition edited by Dr. Klein, the tenth to the thirteenth (in 1892) edited by Mr. Baker and Dr. V. D. Harris, and then in 1896 came the selection of Professor Halliburton on the recommendation of Sir William Gowers. Under Professor Halliburton the book passed through seventeen editions in twenty-nine years and sold a total of 116,000 copies.

Consultations de cardiologie. Par Georges Marchal, médecin de l'Hôpital Tenon. Préface du Docteur Ch. Laubry, médecin de l'Hôpital Broussais. Paper. Price, 25 francs. Pp. 227, with 13 illustrations. Paris: Masson & Cie, 1935.

This presents thirty case histories with the symptoms, physical observations, laboratory examination and the treatment given under the care of the author. There are two interesting cases in the series not commonly encountered, a syphilitic pulmonary arteritis, or Ayerza's disease, with excellent roentgenographic studies, and another of cardiac failure as a result of filariasis. There are a number of points of diagnosis and results of treatment that do not conform to American views. The author discusses a case of rheumatic pancarditis described as cured by treatment with sodium salicylates administered orally and intravenously. Another case of syphilitic myocarditis with congestive heart failure is described which, according to our standards, would be classified as hypertensive vascular disease with systemic syphilis. The book is of interest only from the standpoint of the citation of thirty rather interesting case histories and presents a fair concept of the present French view of the various types of heart disease.

The Doctor and the Public: A Study of the Sociology, Economics, Ethics, and Philosophy of Medicine, Based on Medical History. By James Peter Warbasse, M.D. Cloth. Price, $5. Pp. 572, with 19 illustrations. New York: Paul B. Hoeber, Inc., 1935.

After a surgical practice of a quarter of a century, Dr. Warbasse is devoting himself to the economic aspects of medical work. He expresses his point of view by saying that the solution of the medical problem is to be found in expanding the functions of the medical profession and in increasing the employment of physicians. Dr. Warbasse seems inclined to favor voluntary socialization of medicine without political control—a handsome ideal but certainly, in the present state of our civilization, only an ideal. In this volume he traces the history of health protection from the earliest times, giving special attention to the development of medicine among the Greeks and among the civilized countries of the middle ages. More than two thirds of his volume is thus devoted to a brief history of the development of scientific and preventive medicine. With chapter 8 he begins a discussion of medical education of the public, quoting largely from the reports of the Committee on the Costs of Medical Care. In chapter 10 he turns his attention to his main thesis. Here he outlines the organization of various forms of group practice in the United States, pointing out that some form of socialization of medicine is coming and urging the development of a system under which doctors would be on salaries and employed by groups of patients under contractual relationships.

Living Along with Heart Disease. By Louis Levin, M.D., Cardiologist to the St. Francis Hospital and New Jersey State Prison Hospital, Trenton, N. J. With a foreword by Thomas M. McMillan, M.D., Associate Professor of Cardiology, Graduate School of Medicine, University of Pennsylvania. Cloth. Price, $1.50. Pp. 126. New York: Macmillan Company, 1935.

The purpose of the author "is to present to the reader a simplified explanation of the various aspects of heart disease, with the ultimate hope of instilling sane optimism in the patient's philosophy of heart disorders." Medical books for the layman are difficult to write, especially if they are intended for the reader who is also a sufferer from the diseases described. This small book, however, will probably do no harm to the cardiac patient who reads it and may interpret heart disease helpfully to certain patients. The discussion includes chapters on the fear of heart disease, the types, "leaky" hearts, myocarditis, hypertension, heart pain, treatment, questions and answers, the philosophy of heart disease, and the physician. It is a good summary of heart disease in general and will give the layman a sound point of view on the whole subject. Unfortunately, heart disease is not a single entity and it would appear somewhat difficult for the practicing physician to decide for whom to prescribe this book. The handling of patients in practice is so individual a matter that the amount and type of explanation of their disease which seems justified must be varied to suit each case. Does it profit the patient with angina pectoris to read about subacute bacterial endocarditis or cardiac arrhythmia, or to know the procedures used in the treatment of congestive failure which he may sometime experience after a coronary thrombosis? The style of the book is breezy and at times dramatic, but it suffers from an attempt at popular appeal through the use of slang and literary gymnastics and contains a few errors of fact. However, these are of minor importance and are outweighed by the amount of helpful advice that is given.

Experimental and Clinical Researches on Angina Pectoris and Its Surgical Treatment. By Rene Leriche, F.R.C.S., F.A.S.A., Professor of Clinical Surgery, Strasbourg. Macewen Memorial Lecture, 1934. Paper. Price, 1/6. Pp. 24, with 7 illustrations. Glasgow: Jackson, Wylie & Co., 1935.

In this lecture Leriche presents a summary of his views concerning angina pectoris and its surgical treatment based on experimental and clinical studies, which, with Fontaine, he has carried on for some ten years. For the details of these studies as well as for a comprehensive view of the whole subject of the surgical treatment of angina the reader must look elsewhere, for the author confines himself strictly to the topic; viz., his own conclusions based on his own work. Leriche accepts the coronary origin of angina yet considers spasm a prominent feature in some cases. Pain, he says, is a symptom and not the real disease. He discusses the physiology of the nervous mechanism involved in pain; also the importance of anastomosis as a compensatory factor. There are still many questions to be solved, such as the cause of thrombosis, which is the "greatest unknown factor in arteritis." The indications for operation are considered. The operation of choice is the removal of the stellate ganglion. His conservatism is shown by the fact that in nine years he has performed but eighteen operations. The results he regards as encouraging. The article is a model of clear, terse writing and will be consulted by all who are trying to familiarize themselves with this important subject.

Fifty Years a Surgeon. By Robert Tuttle Morris. Cloth. Price, $3.50. Pp. 347. New York: E. P. Dutton & Co., Inc., 1935.

The name of Robert T. Morris is familiar to most American medical readers. Through our generation he has contributed largely to the literature of medicine and to its letters. His career began just before the coming of the age of asepsis, so that he is able to tell us in his excellent style what surgery was like in that early period. He begins his book in his early days, which depict his interest in the woods and in nature, an interest which has no doubt made happy his declining years. Then comes the story of his medical education and his early years at Bellevue Hospital. The concluding chapters in his book concern such interesting topics as osteopathy, fads and cures, psychoanalysis, sex and birth control, professional jealousies and fee splitting. On each of these subjects he ventures his personal opinion and casts the light of his experience. It should, of course, be recognized that these chapters do not aim to be authoritative or necessarily comprehensive. The book is personal in every sense of the word and, as such, one of the most interesting autobiographic documents that has been recently available.

Modern Criminal Investigation. By Harry Söderman, D.Sc., Head of the Institute of Police Science, School of Law, University of Stockholm, Sweden, and John J. O'Connell, Deputy Chief Inspector, New York City Police Department. Cloth. Price, $3. Pp. 461, with 110 illustrations. New York & London: Funk & Wagnalls Company, 1935.

The biologic laboratory comes more and more into the investigation of the methods of crime. Microscopic studies of hair, finger prints, precipitin and agglutinin studies of the blood, anthropologic measurements, are all within the range of biologic study. In this volume the author considers all these methods as well as many others and relates a considerable number of interesting medicolegal cases in which their application was of significance. The book is up to date and certainly should be in the hands of every judge, lawyer and physician who is interested in medicolegal work.

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Medicolegal

Pneumoconiosis Following Inhalation of Limestone Dust; Employer Not Liable.—Christopher had been an employee of the defendant company, which operated a rock quarry and stone crusher. After he had been so employed for a year, ill health compelled him to quit work. Two months later he died. The plaintiff, administrator of Christopher's estate, sued the defendant company, alleging that death was caused by the inhalation of limestone dust. From a judgment dismissing the petition, the plaintiff appealed to the Court of Appeals of Kentucky. The plaintiff alleged that the harmful and deadly effect of the inhalation of limestone dust and small particles of limestone rock was unknown to his intestate, Christopher, but was known to the defendant, Christopher's employer, or that the defendant could have known of it by the exercise of ordinary care, and that the defendant negligently compelled Christopher to work in the dust and small particles of limestone rock and did not furnish him with a mask to go over his mouth and nose to prevent the inhalation of such dust and particles. The Court of Appeals, however, was unable to find any statute requiring the defendant to provide Christopher with such a mask and could find in the record no allegation that masks had been tried and found capable of advantageous use, or of any use, in work of the character of that in which Christopher was engaged, or that any men anywhere had ever used masks in that sort of work. The needs of society, said the court, may be such that very dangerous work must be undertaken to supply those needs. Men have the right to employ other men to do such work, and if in the doing of it the servant is injured, the liability of the master, if any, must be found not in the inherent hazards of the work but in some negligence of the master in the way that he has the work done. An employer is not required to adopt a particular method because it affords greater safety for the employee, but he is required to adopt the usual and customary method employed by ordinarily prudent men in like work under similar circumstances. The judgment in favor of the defendant stone company was affirmed.—*Christopher's Adm'r v. Blanton Stone Co., Inc. (Ky.), 80 S. W. (2d) 590.*

Hospitals: Liability for Self-Inflicted Injury of Mentally Disordered Patient.—The defendant hospital association maintained a general hospital for medical, surgical, obstetric and pediatric cases. On February 15 the plaintiff was brought to the hospital by his brother and was admitted as a patient. The brother seems to have named Dr. Richard Johnson as the patient's attending physician, and Dr. Johnson, on being notified of the plaintiff's admission to the hospital, prescribed a sedative, strict rest in bed, no visitors, and other measures appropriate for a mentally distressed patient. No history of the case was taken by any one on behalf of the hospital. The patient was cared for in a ward room on the second floor until February 18, because no single room was available. On that day, when a single room on the third floor became available, bars were placed on the outside of the lower half of the window in such a way as to prevent the lowering of the upper sash more than a few inches, and the patient was removed to it. The placing of the bars at the window, it was explained, was an action taken in all cases of nervous patients. On the floor where the patient was, there were then a supervisor, a graduate nurse and four student nurses. According to the record, they called at the patient's room frequently. He had been last visited by one of them some time after 4 o'clock in the afternoon, when shortly thereafter and about three hours after his transfer to the safeguarded room, he broke the glass in the upper sash of the window and jumped out. The patient had manifested evidences of agitation but apparently no discoverable evidences of a suicidal tendency. No physical restraints were applied. No nurse was in constant attendance. The patient was severely injured by his fall, and by his guardian he sued the defendant hospital association. The jury returned a verdict in his favor and the hospital association appealed to the Supreme Court of Minnesota.

If the actions of a patient, said the Supreme Court, are such that a reasonably prudent person should anticipate an inclination on his part to attempt to escape or to commit suicide, reasonable care should be exercised to prevent such an act. In the opinion of the court, however, the known facts in this case were not such as to charge the hospital association with negligence in not recognizing that the patient contemplated escape or suicide. A reasonably prudent nurse or intern in a general hospital could not have anticipated that the patient, under the circumstances, would suddenly jump out of bed, step up on the window sill, climb over the large lower half of the glass, break the pane in the upper half, and throw himself out of the window. The plaintiff's own attending physician knew as much as the hospital authorities did, or more, concerning the plaintiff's condition, and yet he gave no instructions to apply restraints nor did he direct that the bars should be put on the windows.

The nurses and interns at a general hospital, said the Supreme Court, are charged with the duty of carrying out the instructions of the attending physician, except in cases of emergency. When a patient enters a hospital on the advice of his physician, he has the right to expect that the instructions of his physician will be complied with. He relies on the skill of his own physician, but he knows nothing of the ability of the interns and nurses. When an emergency arises it is, of course, incumbent on the nurses or interns to exercise their own judgment until report can be made to and instructions received from the attending physician. Such, the evidence shows, was the practice at the defendant hospital. The rule has been laid down in *Byrd* v. *Marion General Hospital,* 202 N. C. 337, 162 S. E. 738, as follows:

> The great weight of authority, however, establishes the principle that nurses, in the discharge of their duties must obey and diligently execute the orders of the physician or surgeon in charge of the patient, unless, of course, such order was so obviously negligent as to lead any reasonable person to anticipate that substantial injury would result to the patient from the execution of such order or performance of such direction. Certainly, if a physician or surgeon should order a nurse to stick fire to a patient, no nurse would be protected from liability for damages for undertaking to carry out the orders of the physician. The law contemplates that the physician is solely responsible for the diagnosis and treatment of his patient. Nurses are not supposed to be experts in the technique of diagnosis or the mechanics of treatment.

The court was unable to agree with the plaintiff that the defendant hospital association, through its employees, should have ascertained the plaintiff's condition before admitting him to the hospital. The plaintiff was left at the hospital by his brother, who gave no information concerning his ailment. The instructions received from the plaintiff's physician, who presumably was aware of his patient's condition, indicated nothing more than that the patient was in need of rest. So far as the record shows, the patient's physician was not an employee of the defendant hospital association and his negligence, therefore, if there was any, cannot be imputed to the association. If the defendant association had maintained and operated a hospital for the purpose of treating and curing diseases, physical and mental, and had its own staff of physicians and specialists for that purpose, probably it would have been its duty to ascertain all it could concerning an entering patient's previous history, a rule especially apt with respect to hospitals specializing in the cure of mental disorders. The hospital maintained by the defendant association, however, was merely a place to which physicians sent patients under their own care. The hospital association did not take on itself the curing of any disease, either by medical treatment or by surgical operation. The hospital attendants performed routine services and carried out the instructions of the attending physician. Patients were not furnished with a nurse in constant attendance, unless requested. Relatives of the patient must be charged with a knowledge of these facts. It would be a harsh rule indeed, said the Supreme Court, that would charge the authorities of a general hospital to go in search of the relatives of every patient entering it under the care of a physician of his own or a relative's selection, and ascertain, independently of the attending physician, the nature of the patient's ailment and then to exercise their own judgment as to treatment required.

The Supreme Court reversed the judgment of the trial court in favor of the plaintiffs and ordered that, notwithstanding the verdict, judgment be entered for the defendant.—*Mesedahl v. St. Luke's Hospital Ass'n of Duluth (Minn.), 259 N. W. 819.*

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Workmen's Compensation Acts: Ophthalmia Due to Exposure a Compensable Injury.—The plaintiff was employed by the defendant to operate a machine removing snow from the highway. His work required him to keep his eyes constantly on the snow. On March 23 he worked at his task for twelve hours, the day being "quite warm for that time of year" and the sun shining brightly. At the end of the day he was burned about the face, as if sunburned, and his eyes were inflamed. The skin of his face desquamated. His eyes grew worse, and during the week an ulcer developed in the right eye and on or about May 18 another developed in the left eye. There was a severe infection and ulceration on the conjunctivae and the corneas of both eyes, with the appearance of pus. The plaintiff instituted proceedings against his employer, under the Nebraska workmen's compensation act. An award in his favor by the compensation commissioner was sustained by the district court, and the employer appealed to the Supreme Court of Nebraska.

The condition of the plaintiff, said the Supreme Court, was produced by "snow blindness" or "snow ophthalmia." The condition is rare in the climate in which the plaintiff was working and therefore the court concluded that it was unexpected and unforeseen. There was no dispute as to the existence of "a burning" in snow blindness, and the injury to the eyes of the plaintiff was therefore violence to the physical structures of the body. The injury, said the Supreme Court, was due to the reflection of ultraviolet rays of sunlight from the bright snow, which had to continue for several hours before it manifested itself or became known to the person exposed. In this instance, the condition manifested itself on the day of exposure and therefore may be said to have occurred suddenly. In the light of these facts, the judgment of the court below sustaining the award of the compensation commissioner was affirmed.—*Hayes v. McMullen (Neb.), 259 N. W. 165.*

Malpractice: Degree of Care and Skill Required; Qualifications of Expert Witness.—The physician-defendant treated oblique fractures of both bones of a patient's leg. Three weeks after reducing the fractures he massaged and manipulated the foot and ankle. Immediately thereafter his patient complained of a severe tearing sensation in the leg. After her complaint no roentgenogram was made until after six weeks. A roentgenogram then showed the fragments to be out of place and not united. After an operation, which included bone grafting, union was effected and the wound healed. The record shows that the patient subsequently died, but the time and cause of death is not stated and there is nothing to indicate that it was connected with the injury described. The plaintiff, individually and as administratrix of the estate of the deceased patient, sued the defendant-physician. From a judgment holding that no cause had been established, the plaintiff appealed to the district court of appeal, second district, division 2, California.

The plaintiff based her suit on the claim that the physician-defendant caused the fragments of the broken bones to slip from their places when he massaged and manipulated the foot and ankle, and that he failed to have roentgenograms taken and in other respects to use ordinary care and skill in determining whether the fragments were or were not in proper position. The court of appeal drew a distinction between *proper* treatment and the care and skill required by law. "Proper treatment," said the court, implies that no error shall be committed thereby, that an approximate perfect result will be produced, that such result is guaranteed, whereas the law demands only that the physician use reasonable care to attain such approximate perfection. In the absence of evidence to the contrary, the law will presume the exercise of a reasonable degree of care and skill. The absence of skill is not presumed from the mere failure of treatment to produce a cure. If a physician possesses a reasonable degree of learning and skill and, in the treatment of the patient's injury, exercises ordinary care and skill, measured by the standards of his profession in the same locality, he is not liable for the results that follow. It is a rule, said the court, that proof of negligence or lack of care or skill on the part of a physician in a malpractice case consists only in the opinion of experts. To qualify as an expert in a malpractice case, the witness must show not only that he possesses learning and knowledge on the subject of inquiry, sufficient to qualify him to speak with authority on the subject, but also a familiarity with the treatment and degree of care and skill of other practitioners in the locality in question sufficient to qualify him to say whether or not the defendant's treatment was consistent with what other physicians in the exercise of reasonable care might do under similar circumstances. As the expert called as a witness by the plaintiff failed to show that he possessed sufficient familiarity with practice in the locality with respect to treatment of oblique fractures of the leg bones, the trial court properly sustained an objection to his competence.

Viewed in the light most favorable to the plaintiff, the evidence wholly failed to establish a case of malpractice. The motion of the defendant to dismiss the case for lack of evidence was properly granted.—*Rasmussen v. Shickle (Calif.), 41 P. (2d) 184.*

Narcotics: Possession Unlawful Although Obtained on Physician's Prescription.—The defendant, according to the record, applied to a physician for a remedy for arthritis. The physician testified that the defendant had contracted a cold, had a high fever and was suffering considerable pain, and that because of the defendant's ailments he prescribed one-half grain tablets of morphine sulfate and five grain tablets of sodium salicylate. The defendant was thereby enabled to obtain twenty tablets of morphine sulfate containing one-half grain each. He was later arrested and it was found that he had consumed or otherwise disposed of, within eight hours, twelve such tablets. Eight tablets were found in his possession and he was charged with unlawful possession under the Kansas law. Two physicians who examined him after his arrest testified that there was no visible sign of arthritis and that his actions while in custody presented the picture of a drug addict. The analyst of the state food laboratory testified that it would be impossible for a normal person, one not addicted to the use of narcotic drugs, to consume twelve one-half grain tablets of morphine sulfate within eight hours. The defendant was convicted and appealed to the Supreme Court of Kansas.

The fact that the defendant procured the narcotics found in his possession on the basis of a prescription issued to him by a physician, said the Supreme Court, does not exempt him from the operation of the statute making the possession of narcotic drugs unlawful, if he misrepresented his condition to the prescribing physician. The quantity of narcotic drugs procured and the use of them by the defendant tended to show an unlawful use, whether the defendant used them himself or sold some of them to others. The court, being convinced that the defendant had obtained by subterfuge the narcotic drugs in his possession, affirmed the judgment of conviction.—*State v. Strode (Kan.), 42 P. (2d) 603.*

Privileged Communications: Testimony of Examining Physician Inadmissible; Presence of Third Person as a Waiver.—The plaintiff, as beneficiary, sued the Policy Holders' Life Insurance Association for the benefits promised in a policy of insurance issued to his wife. To prove that the insured wife, in her application for the policy, made misrepresentations concerning her previous health, the insurer sought to introduce the testimony of a physician who examined her some time after the policy had been issued. The trial court excluded his testimony on the ground that it was privileged and therefore inadmissible under the California statute of privileged communications. Judgment was rendered for the plaintiff, and the insurer appealed to the California district court of appeal, second district, division 1.

According to the testimony, the insured, some time after her insurance policy had been issued, applied to the Coffey-Humber Clinic for treatment. There she was examined by the physician whose testimony was excluded by the trial court. The clinic is maintained by the W. K. Kellogg Foundation, but this physician was not employed by the clinic or by the foundation but by W. K. Kellogg personally. His sole duty was to examine prospective patients and at a subsequent time to reexamine such as were accepted, but only for the purpose of determining

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the efficacy of the treatment given by the clinic. He had nothing whatever to do with directing or administering treatment. The physician whose testimony was excluded made a physical examination of the insured in the presence of the physician's stenographer, took her history and reported it to the Kellogg Foundation and to the clinic. It is fair to assume, said the district court of appeal, that a patient applying to the Coffey-Humber Clinic for treatment was not treated solely on the patient's statement that he or she had cancer. The physician whose testimony was excluded had regular hours at the clinic and made appointments with patients. No patient could receive treatment unless examined by him or some other physician who performed similar duties. That examination, the court of appeal was convinced, was an indispensable part of the treatment given. The California statute of privileged communications provides, among other things, that—

> A licensed physician or surgeon cannot, without the consent of his patient, be examined in a civil action as to any information acquired in attending the patient, which was necessary to enable him to prescribe or act for the patient.

The proffered testimony of the examining physician was within the scope of the statute and was properly excluded.

The insurer contended that the insured, by permitting the presence of the stenographer during the examination, waived her privilege. The mere presence of a third person, the court of appeal said, does not mean that the privilege has been waived as to the physician. The capacity in which the third person is present controls. The court of appeal held that where a third person is present as an agent of the attending physician, the privilege is not waived so far as relates to the attending physician. Because the stenographer was not offered as a witness, the court did not determine whether she could or could not have been required to testify. The judgment of the trial court against the insurer was affirmed.—*Kramer v. Policy Holders' Life Ins. Ass'n (Calif.), 42 P. (2d) 665.*

Dental Practice Acts: Revocation of License for Default in Annual Registration; Injunction to Prevent Unlawful Practice.—A law requiring a dentist to register annually, paying a fee for doing so, and authorizing the irrevocable cancellation of his license if he fails, is valid, according to the Court of Appeals of Kentucky, even though the defaulting dentist was licensed when annual registration was not required, was absent from the state when the annual registration law was passed, had been continuously absent ever since and was given no notice of the prospective cancellation of his license. Equity will enjoin such an unlicensed dentist from practicing, even after the grand jury has failed to indict him for the unlawful practice of dentistry.—*Commonwealth ex rel. Attorney General v. Pollitt (Ky.), 80 S. W. (2d) 543.*

Malpractice: Cerebral Hemorrhage Attributed to Chiropractic Adjustment.—This is the third opinion rendered by the Supreme Court of Florida in this case, and the case is as yet unsettled. Briefly, the plaintiff's wife died from a cerebral hemorrhage following chiropractic adjustments of her spine by the defendant-chiropractor. The plaintiff charged that the defendant negligently used so much force and violence in attempting to adjust the vertebrae that he ruptured a vessel at or near the base of his patient's brain and thereby caused a hemorrhage into and around her brain and spinal cord, from which his patient died. The plaintiff obtained a judgment in the trial court, but on appeal the Supreme Court of Florida held that although the evidence was sufficient to warrant a finding that death resulted from the chiropractic adjustments, it was insufficient to prove that those adjustments were done in an unskilful or negligent manner. The Supreme Court was induced, however, to give a rehearing, and on that rehearing it held that the testimony of physicians that the rupture of the blood vessel in the brain was caused by violence, together with the defendant-chiropractor's own testimony that a properly made adjustment could not have caused such a rupture, was legally sufficient to sustain a verdict against the chiropractor. The court on this occasion affirmed the judgment of the trial court in favor of the plaintiff. *Foster* v. *Thornton*, 152 So. 667; abstr. THE JOURNAL, Oct. 20, 1934, p. 1260. Again the Supreme Court granted a rehearing and reviewed the evidence for a third time. This time the court was unable to reach a conclusion, three justices being in favor of affirmance of the trial court's decision and three for reversal. Ordinarily, in such a situation, the judgment of the lower court would be affirmed, but in this case the Supreme Court thought that the ends of justice would be better served by remanding the case for a new trial, and it was so ordered.—*Foster v. Thornton (Fla.), 160 So. 490.*

Hospitals: Abscesses Following Hypodermic Injections by Nurse.—The plaintiff entered the defendant hospital as a paying patient, under the care of her own physician, for care during childbirth. Her physician, she alleged, instructed a nurse employed by the hospital to administer a hypodermic injection of magnesium sulfate in the fleshy part of each arm, whereas the nurse administered those injections in the large muscles of the hips or thighs. Abscesses developed at the sites of the injections. The patient sued the hospital, contending that it failed to provide her with a competent trained nurse. The trial court gave judgment for the patient, and the hospital appealed to the Supreme Court of Oklahoma.

There was no substantial dispute except as to whether the nurse was instructed by the attending physician concerning the site of the hypodermic injections. All medical witnesses testified that the usual site of injection was the large muscle of the hip or thigh, but the patient's attending physician testified that he preferred to give such injections in the arms. There was no evidence of error in the nurse's technic of administration. Neither was there any evidence to show that similar abscesses would not have followed injections into the arms. Nothing in the evidence indicated that the site of injection had anything to do with the abscesses, except as it determined their location. In the opinion of the Supreme Court, the evidence indicated only that, except for the nurse's negligent act, the abscesses would have occurred in some part of the body other than the places at which they did occur. There was no evidence to show that the injury would have been less likely to occur or be less severe if injections had been made in the arms. The evidence did not show that the nurse's negligence was the proximate cause of the injury.

The judgment of the trial court was reversed, with directions to enter judgment for the defendant hospital.—*Masonic Hospital Association of Payne County v. Taggart (Okla.), 43 P. (2d) 142.*

Society Proceedings

COMING MEETINGS

American Association for the Study of Neoplastic Diseases, Baltimore, Dec. 19-21. Dr. Eugene R. Whitmore, 2139 Wyoming Avenue N.W., Washington, D. C., Secretary.

American Student Health Association, New York, Dec. 27-28. Dr. Harold S. Diehl, University of Minnesota Medical School, Minneapolis, Secretary.

Eastern Section, American Laryngological, Rhinological and Otological Society, Newark, N. J., Jan. 3. Dr. Henry B. Orton, 24 Commerce St., Newark, N. J., Chairman.

Middle Section, American Laryngological, Rhinological and Otological Society, Milwaukee, Jan. 11. Dr. William E. Grove, 324 East Wisconsin Avenue, Milwaukee, Chairman.

Mid-Western Section, American Laryngological, Rhinological and Otological Society, St. Louis, Jan. 14. Dr. Harry W. Lyman, Carleton Building, St. Louis, Chairman.

National Society for the Prevention of Blindness, New York, Dec. 5-7. Mr. Lewis H. Carris, 50 West 50th Street, New York, Managing Director.

Puerto Rico, Medical Association of, Santurce, Dec. 13-15. Dr. Euripides Silva, Ave. Fernandez Juncos, Parada 19, Santurce, Secretary.

Radiological Society of North America, Detroit, Dec. 2-6. Dr. Donald S. Childs, 607 Medical Arts Building, Syracuse, N. Y., Secretary.

Society of American Bacteriologists, New York, Dec. 26-28. Dr. I. L. Baldwin, College of Agriculture, University of Wisconsin, Madison, Wis., Secretary.

Society of Surgeons of New Jersey, Jersey City, Jan. 15. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.

Southern California Medical Association, Los Angeles, Nov. 29-30. Dr. Robert W. Langley, 1930 Wilshire Boulevard, Los Angeles, Secretary.

Southern Section, American Laryngological, Rhinological and Otological Society, Jackson, Miss., Jan. 18. Dr. Robin Harris, Lamar Building, Jackson, Miss., Chairman.

Southern Surgical Association, Hot Springs, Va., Dec. 10-12. Dr. E. W. Alton Ochsner, 1430 Tulane Ave., New Orleans, Secretary.

Western Surgical Association, Rochester, Minn., Dec. 6-8. Dr. Albert H. Montgomery, 122 South Michigan Boulevard, Chicago, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Anatomy, Philadelphia

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Plexus Omentalis and Its Relation to Capillary Innervation in Omentum of Rabbit. N. A. Michels, Philadelphia.—p. 205.

Aortic (Depressor) Nerve and Its Associated Epithelioid Body, Glomus Aorticum. J. F. Nonidez, New York.—p. 259.

Fetal Death, Prolonged Gestation and Difficult Parturition in the Rat as Result of Vitamin A Deficiency. K. E. Mason, Nashville, Tenn. —p. 303.

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Cutaneous Reactions to Hemolytic Streptococcus Nucleoprotein in Persons with Scarlet Fever. J. D. Lyttle, D. Seegal and Elizabeth L. Jost, New York.—p. 573.

*Prophylactic Use of Parents' Whole Blood in Anterior Poliomyelitis: Philadelphia Epidemic of 1932. J. Stokes Jr., I. J. Wolman, H. C. Carpenter and J. Margolis, Philadelphia.—p. 581.

Respiratory Metabolism in Infancy and in Childhood: XV. Daily Energy Requirements of Normal Infants. S. Z. Levine, T. H. McEachern, M. A. Wheatley, E. Marples and M. D. Kelly, New York. —p. 596.

Body Build Factor in Basal Metabolism of Boys. M. Molitch, Jamesburg, N. J.—p. 621.

Familial Studies on Lobar Pneumonia: Epidemiologic Studies on Families of Children with Pneumococcic Lobar Pneumonia. J. J. Bunim and J. D. Trask, New Haven, Conn.—p. 626.

*Occurrence of Tubercle Bacilli in Blood of Umbilical Cord and in New-Born Infants of Tuberculous Mothers. M. Siegel and B. Singer, New York.—p. 636.

Coarctation of the Aorta: Report of Three Cases. E. N. Ballantyne, Hamilton, Ont.—p. 642.

*Maldevelopment and Maldescent of Testes: Report of Treatment with Anterior Pituitary-like Gonadotropic Hormone from Urine of Pregnant Women. G. B. Dorff, Brooklyn.—p. 649.

Appendicular Form of Bacillary Dysentery, with Notes on Mesenteric Adenitis and Inflammation of Distal Portion of Ileum. J. Felsen, New York.—p. 661.

Prophylactic Use of Whole Blood in Anterior Poliomyelitis.—Stokes and his associates discuss and tabulate the results of prophylactic injection of parents' blood, pooled convalescent serum and pooled adult serum in 2,179 children in Philadelphia. An attempt to analyze statistically the incidence of poliomyelitis in a group of 620 children who received injections in a certain census tract area of Philadelphia, and its relation to the group who did not receive injections in the same area, is described. A small group of eleven children who contracted poliomyelitis from five to eighteen days following the injection of whole blood or serum is described. The mild nature of the attack is emphasized as apparently favoring such prophylaxis, since residual paralysis developed in only one child. The authors state that, if one assumes that parents' whole blood usually contains as large amounts of immune bodies against poliomyelitis as does pooled adult serum, the advantage of a readily available supply for immediate use probably will determine its choice. This procedure is particularly applicable in the presence of a widespread epidemic without adequate preparation for it. If in the future passive immunization with serum or whole blood proves to be effectual, it is possible that the availability of lyophile serums may rectify such lack of preparation. They believe that, in view of the experiences in Philadelphia and in Bradford and the favorable clinical impressions derived from them, parents' whole blood should be used as a prophylactic measure whenever possible in large epidemics of poliomyelitis, both for the sake of the children and for the purpose of accumulating further statistics regarding its value. Over the period of an epidemic more than a single injection would seem advisable, since passive immunization probably does not persist for more than from four to six weeks. Lyophile human serums of high neutralizing value against the virus of poliomyelitis, which apparently retain their antibody titer, should be made available wherever epidemics arise.

Tubercle Bacilli in Infants of Tuberculous Mothers.—Siegel and Singer studied fifteen new-born infants of tuberculous mothers for evidence of the transmission of tubercle bacilli by way of the umbilical vein. Cultures of umbilical blood by the Loewenstein method were negative for tubercle bacilli in fourteen infants. In the one in which the culture of umbilical blood was positive, the placenta had a large tuberculous area. The child was born prematurely at seven months and died three hours after birth with no demonstrable lesions on postmortem examination. A culture of the heart blood was strongly positive for tubercle bacilli. The mother died of tuberculosis eighteen hours after delivery. In the fourteen cases in which cultures of umbilical blood gave negative results, the placentas were normal on routine macroscopic examination and on microscopic study of several sections. The new-born infants in this group showed no evidence of tuberculosis. Four died within one month, and cultures of the heart blood and of specimens from the liver, spleen and lungs were negative for tubercle bacilli. Ten are normal, as shown by repeated roentgenograms of the chest and results of intracutaneous tests with 10 mg. of tuberculin. Of the fourteen mothers in this group, nine had advanced pulmonary tuberculosis and five had minimal, nondestructive lesions. The tuberculous process in those mothers with advanced phthisis progressed during the postpartum period and caused death in five instances. Those with minimal lesions showed no progression after labor. Cultures of blood taken before and after labor from five mothers with advanced pulmonary tuberculosis were negative for tubercle bacilli by the Loewenstein method.

Maldevelopment and Maldescent of Testes.—Dorff gives the results in fourteen boys having hypoplastic genitals who were treated with the anterior pituitary-like gonadotropic principle from the urine of pregnant women (and with the anterior pituitary growth hormone). In seven of eight patients with undescended testes there was some increase in size and descent, while in the other patients with hypoplastic testes there was a double or triple increase in size. The first apparent sign of the effectiveness of the therapy was usually a blushing or pinkish coloration of the scrotum and often of the penis. With the enlargement of the scrotum, an increase in the size of the testes was observed and, later, of the penis. There appeared blond, fuzzy pubic hairs, which later became pigmented, more numerous and longer. This progression of development was noticed even in the younger children. It was necessary to administer a large quantity of extract before beneficial effects were evident and a larger number of total rat units before effectual results were obtained. The response was slow, and very little change could be observed during the first few months of therapy. The most efficacious dosage was found to be a large dose of anterior pituitary-like gonadotropic principle from the urine of pregnant women (250 rat units) given from three to five times a week until there was a genital response, and then the same amount given three times a week. There were two predominant types of persons in the author's series: those with adiposogenital dystrophy and those with mild or masked hypothyroidism. A lowered basal metabolic rate, evident in patients with primary hypogonadism and in those with hypothyroidism, will remain low, even after the administration of the anterior pituitary-like gonadotropic principle, although there may be a slight increase. The basal metabolic rate at the onset of treatment was on the minus side, and the author feels that under true basal conditions and on several repetitions of this test there would be still lower minus rates. If there are no mechanical factors to obstruct descent, good results can be anticipated and obtained in patients with maldeveloped or maldescended testes. Also, there is the possibility of developing an apparently absent testis, and therefore treatment should be given. Treatment may be started at any time before puberty. However, patients closer to puberty show a more rapid response. Although the author discontinued thyroid therapy during his study, he thinks that it should be given along with the anterior pituitary-like gonadotropic principle in order to obtain the best

results in the patients with mild or masked hypothyroidism. Patients with hypoplastic and undescended testes should not be submitted to surgical procedures until a course of intensive treatment with the anterior pituitary-like gonadotropic principle has been instituted for one year without success.

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Pathologic and Immunologic Problems in the Virus Field. T. M. Rivers, New York.—p. 435.
Serologic Classification of Hemolytic Streptococci in Relation to Epidemiologic Problems. H. F. Swift, Rebecca C. Lancefield and K. Goodner, New York.—p. 445.
Acute Vasospastic Hypertension: Case with Signs of Cerebral Irritation and Severe Retinitis with Remission. N. M. Keith and H. P. Wagener, Rochester, Minn.—p. 454.
Suggestion for Simple Treatment of Acute Arterial Spasm. E. P. Lehman, University, Va.—p. 459.
Study of Venous Blood Pressure in Some Common Diseases. W. B. Wartman, Philadelphia.—p. 464.
Demonstration of Collateral Venous Circulation in Abdominal Wall by Means of Infra-Red Photography. E. Jones, Nashville, Tenn.—p. 478.
*Studies of Peripheral Vascular Phenomena: IV. Effect of Artificial Fever on Pulse-Volume Changes of Finger. C. A. Johnson, S. Osborne and G. Scupham, Chicago.—p. 485.
*Metabolic Rates in Therapeutic Fever. I. Kopp, Boston.—p. 491.
Study of Coagulation Defect in Hemophilia and in Jaundice. A. J. Quick, Milwaukee; Margaret Stanley-Brown and F. W. Bancroft, New York.—p. 501.
Gaucher's Disease of Late Onset with Kidney Involvement and Huge Spleen. J. S. Horsley Jr., J. P. Baker Jr. and F. L. Apperly, Richmond, Va.—p. 511.
Hyperparathyroidism with Renal Insufficiency. D. E. Bellin and B. S. Gershwin, Brooklyn.—p. 519.
Pellagra: Analysis of Cases Admitted to the Pennsylvania Hospital Since 1922. T. C. Garrett, Philadelphia.—p. 525.
The Psychologic Background of Colitis. F. Bodman, Bristol, England. —p. 535.
The Common Denominator of Disease. G. Draper, New York.—p. 545.

Effect of Artificial Fever on Pulse-Volume Changes of Finger.—Johnson and his associates observed an increased pulse-volume change with all types of artificial fever except foreign protein, which gave a primary decrease of the pulse-volume change associated with the chill. They interpret the increased pulse-volume change as increased circulation, a result of the vasodilatation and probably increased cardiac output. The effect of artificial fever on peripheral circulation, when induced by general heat with prevention of heat loss, was about the same with all the methods used. The finger volume change increased from about 0.01 cc. control to from 0.06 to 0.08 cc. The maximal circulatory response occurred at a temperature considerably lower than the maximum used. The amplitude of the excursions measuring the circulatory response showed marked variations as the temperature was maintained, which they interpreted as due to instability of the vasomotor system and instability of the heat regulating mechanism, which is intimately associated with the vasomotor system. This indicates that there may be an optimal temperature at which a maximal circulatory response occurs. This suggests that high therapeutic fevers up to 106 F. as often used are too high unless factors other than circulation play a part and are brought out only by fevers above the optimum. The circulatory response to artificial fever induced with foreign protein differed from that obtained with artificial fever induced by external heat. Foreign protein uniformly in five patients gave a primary vasoconstriction associated with the chill and followed by a vasodilatation. The vasodilatation was never as great as that produced by the other methods unless heat loss was prevented by insulating the body and the fever maintained. Clinically good results are obtained with foreign protein therapy in spite of the fact that the peripheral circulatory response is not as great with fever induced by other methods. The fundamental difference in the results of foreign protein fever and that produced by external heat is that the vasoconstriction and vasodilatation of foreign protein fever is probably of central origin, while the vasodilatation with fevers produced by other means is chiefly of peripheral origin. Artificial fever induced by external heat is dangerous unless proper precautions are taken, and even then some patients do not tolerate fever well, particularly those with impairment of the cardiovascular system. Proper equipment is paramount. A recording themometer should be used so that an accurate observation of the temperature can be had at all times. A physician should be present at all times, and means for emergency treatment of heat exhaustion should be available. The ability to tolerate this type of artificial fever seems to be related to the cardiovascular reserve. The question of how long the fever should be maintained is debatable. The authors feel that it should not be run to the point of exhaustion. Regarding the best method of inducing artificial fever from external heat, they believe that the ordinary electric light cabinet is probably the best. The most dangerous method is probably the hot water bath.

Metabolic Rates in Therapeutic Fever.—Kopp determined the metabolic rates of seven patients having neurosyphilis, in whom fever was induced by artificial means. In six patients, in whom fever was induced by the combined method of diathermy current, electric cabinet and hot moist air, determinations were started about two and one-half hours after a light breakfast. In the seventh patient, in whom fever was induced by diathermy current, electric cabinet and hot moist air, a method combining the diathermy current, the electric blanket and hot moist air, electric blanket and mixed typhoid vaccine, all determinations were made under basal conditions. An increase in the metabolic rate occurred when fever was induced by the combined method of diathermy current, electric light cabinet and hot moist air. Though a rather suggestive linear relationship was present, fluctuations of a fairly marked degree occurred at different temperature levels when the group is taken as a whole. This may be due to individual variations in the degree of discomfort manifesting itself especially by hyperpnea, the metabolic rates at higher levels paralleling, as a rule, the amount of hyperpnea present. Repeated metabolic rates obtained on one patient under basal conditions in a series of experiments during which body temperature was raised by similar methods and maintained at different levels from one to three hours revealed a fairly uniform increase in body metabolism for each degree of temperature rise. The removal of the insulating hot, moist air blanket when the body temperature had reached its desired height was followed in nearly all cases by a rather steep fall in metabolic rate, whether body temperature remained at the same level, fell or even rose. Metabolic rates for similar temperature levels were higher when the temperature was rising than when falling. The diathermy current alone over short intervals had no specific effect on the basal metabolic rate, provided no rise in body temperature occurred. Alteration of the frequency of the diathermy current at increased temperature levels also caused no appreciable change in the metabolic rate. The increases in metabolic rate obtained on the one patient, in whom a rise of temperature was induced by the five different methods, showed a rather striking parallelism and did not differ much from the accepted rise of 7.2 per cent for each degree Fahrenheit, except in fever induced by diathermy current alone. In the latter the average rise in metabolic rate was 2.4 per cent and 3.9 per cent for each degree of fever. The rapidity of the rise in body temperature played no part in the results obtained. Repeated fever treatment of one patient over a period of seven months had no residual effect on the basal metabolic rate.

American Journal of Physiology, Baltimore

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Exhaustibility of Sympathin Stores. J. A. Dye, Boston.—p. 265.
Differential Depression of Vasomotor Mechanisms by Adrenin. L. C. Wyman and Caroline tum Suden, Boston.—p. 271.
Goat's Milk Anemia. G. O. Kohler, C. A. Elvehjem and E. B. Hart, Madison, Wis.—p. 279.
Study of Mechanism of Hypertension Following Intracisternal Kaolin Injection in Rats; Leukocytic Reaction and Effect on Lymphatic Absorption. J. Q. Griffith Jr., W. A. Jeffers and M. A. Lindauer, Philadelphia.—p. 285.
Basal Metabolism and Urinary Nitrogen Excretion of Oriental Women. Abby H. Turner, South Hadley, Mass., and F. G. Benedict, Boston. —p. 291.
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Area and Intensity-Time Relation in Peripheral Retina. C. H. Graham and R. Margaria, Philadelphia.—p. 299.
Influence of Epinephrine on Blood Sugar, Lactic Acid and Inorganic Phosphorus of Completely Hypophysectomized Dogs. I. L. Chaikoff, Berkeley, Calif.; F. L. Reichert, L. S. Read and M. E. Mathes, San Francisco.—p. 306.

Calculation of Cardiac Output and Effective Peripheral Resistance from Blood Pressure Measurements with Appendix on Size of Aorta in Man. H. C. Bazett, F. S. Cotton, L. B. Laplace and J. C. Scott, Philadelphia.—p. 312.
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Nerve Control of Coronary Vessels with New Experimental Evidence for Pathways of Efferent Constrictor and Dilator Neurons in the Dog. C. W. Greene, Columbia, Mo.—p. 361.
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Errors of Routine Analysis in Counting of Leukocytes. W. R. Bryan, L. L. Chastain and W. E. Garrey, Nashville, Tenn.—p. 416.
Leukocyte Count of Young Male Adults Observed After a Period of Rest and During Mild Activity in Early Morning. W. R. Bryan, L. L. Chastain and W. E. Garrey, Nashville, Tenn.—p. 430.
Influence of Sodium Fluoride on Basal Metabolism of Rat Under Several Experimental Conditions. P. H. Phillips, H. E. English and E. B. Hart, Madison, Wis.—p. 441.
Fetal Carbohydrate Metabolism Following Adrenalectomy, Insulin and Glucose Experiments on the Mother. E. L. Corey, Charlottesville, Va.—p. 450.
Histamine-like Substance in Gastric Juice. C. L. Brown and R. G. Smith, with technical assistance of Jean L. Kyer, Ann Arbor, Mich.—p. 455.
Effect of Viosterol on Oxygen Consumption of Frog's Muscle. S. Gelfan, Chicago.—p. 464.
Blood Regeneration in Severe Anemia: Fractions of Kidney, Spleen and Heart Compared with Standard Liver Fractions. F. S. Robscheit-Robbins, G. B. Walden and G. H. Whipple, Rochester, N. Y.—p. 467.
Action Potentials of Auditory Nerve. A. J. Derbyshire and H. Davis, Boston.—p. 476.

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Sialography, with Particular Reference to Neoplastic Diseases. H. T. Kimm, J. W. Spies and J. J. Wolfe, Peiping, China.—p. 289.
*Roentgenologic Bone Changes in Sickle Cell and Erythroblastic Anemia: Report of Nine Cases. A. G. Grinnan, New York.—p. 297.
*Bone Changes of Leukemia in Children. J. M. Baty and E. C. Vogt, Boston.—p. 310.
*Evaluation of Injury and Faulty Mechanics in Development of Hypertrophic Arthritis. H. P. Doub and H. C. Jones, Detroit.—p. 315.
Roentgen Diagnosis of Fractures of Base of Skull. W. Ginsburg, Moscow, U. S. S. R.—p. 325.
Prolapsing Lesions of Gastric Mucosa. E. P. Pendergrass and J. R. Andrews, Philadelphia.—p. 337.
Diverticulum of Cardia of Stomach: Case Report. J. M. Bonnar and B. Kaplan, New Bedford, Mass.—p. 351.
*Removal of Lymph Nodes in Cancer of Cervix. F. J. Taussig, St. Louis.—p. 354.
Pulmonary Changes Associated with Upper Respiratory Tract Abnormalities and Diseases. T. G. Clement, Duluth, Minn.—p. 364.
Relief of Pain by Roentgen Irradiation in Paget's Disease of Bone. Cassie B. Rose, Chicago.—p. 374.
Preliminary Observations Concerning Effects of Roentgen Irradiation in Presence of Fluorescein. M. E. Goodrich, Toledo, Ohio.—p. 378.
Irradiation in Carcinoma of Lip. I. I. Kaplan and S. Krantz, New York.—p. 381.
Giant Cell Tumor of Spine: Report of Case. G. W. Murphy, Asheville, N. C.—p. 386.
Pelvic Kidney with Ureter Opening Near Urethral Orifice: Report of Case. E. M. Van Buskirk, Fort Wayne, Ind.—p. 395.

Bone Changes in Sickle Cell and Erythroblastic Anemia.—Grinnan observed four cases of sickle cell and five of erythroblastic anemia, all of which showed roentgenologic bone changes. The four cases of sickle cell anemia showed thickening of the frontal, parietal, occipital and temporal bones, with thinning of the inner tables and very thin or absent outer tables. The skull changes found in sickle cell anemia and erythroblastic anemia are so similar that they cannot be differentiated by roentgen examination alone. Changes of the long bones were found in only one case of sickle cell anemia. They consisted of cortical thinning, expansion of the shafts and medullary trabeculations. Striations were also present in the pelvis and scapulas. The bone changes seen are not typical of sickle cell anemia alone but also resemble those of erythroblastic anemia. The five cases of erythroblastic anemia showed bone changes in varying degrees, depending on the age of the patient and the duration and severity of the disease. Three of the erythroblastic cases showed thickening of the skull and extensive changes in the long bones and other bones of the skeleton. The earliest definite bone changes found in erythroblastic anemia occurred in the metacarpals and skull. Four of the cases of erythroblastic anemia occurred among children of Italian parentage. All four cases of sickle cell anemia occurred in Negro children. One case has been presented because it shows that the presence of erythroblasts, even for a relatively short time, produces medullary thickening of the skull. This condition occurred in a child of English-Irish parentage, while it is generally accepted that this occurs only in the Mediterranean races. The bone changes found on roentgen examination in sickle cell anemia and erythroblastic anemia are very similar and are not alone diagnostic of either condition.

Bone Changes of Leukemia in Children.—Baty and Vogt made roentgenograms of part or all the skeleton in forty-three cases of leukemia. The most frequent change was a narrow, transverse zone of diminished density just proximal to the metaphysis of the long bones. This zone or line varied from 2 to 5 mm. in width and was most marked in bones in which growth is rapid, as in the lower ends of the femurs and tibias. It seemed relatively more prominent as the disease progressed. The line was present in the bones of 70 per cent of the forty-three cases. It was present in the bones of sixteen patients less than 3 years of age and in twenty-nine less than 6 years of age. In attempting to analyze the occurrence in the different types of leukemia, it was found that the zone was present in 80 per cent of the cases of myeloid leukemia and in 65 per cent of the cases of lymphoid leukemia. This zone of diminished density is not peculiar to leukemia and its production is not entirely clear. Infiltration and erosion of bone by masses of leukemic cells probably plays some part, particularly in instances in which it is most marked. Microscopic sections of some of these bones showed leukemic infiltration in the region bordering the metaphysis, but the masses of infiltrating cells were not definitely greater than in other regions. The line of rarefaction is very similar in location and in appearance in the Trümmerfeld zone, which is demonstrable in roentgenograms of the bones in scurvy. Neuroblastoma with generalized miliary metastases may simulate rather closely the more advanced changes of leukemia. In both diseases the roentgenograms of the skull may show a diffuse granular mottling and the cranial sutures may be separated as the result of increased intracranial pressure. The pelvis and spine may also give much the same roentgen picture in the two diseases. The bones of the extremities should, however, furnish the information necessary to make a differentiation. It is important that the entire extremities be examined, including the phalanges. One of the most important points in the differentiation is found in the distal bones of the extremities. The metastases of neuroblastoma involve particularly the proximal ends of the large bones, as the humeri and femurs, and much less, if at all, the bones distal to the knees and elbows. Another disease, rare in children, that may cause cortical absorption, osteoporosis and softening and has to be considered in the differential diagnosis is hyperparathyroidism. No real difficulty should be encountered in recognizing the difference in the roentgenogram as well as the clinical and hematologic pictures between leukemia and erythroblastic anemia. The bones in erythroblastic anemia may be very porous as the result of marked hyperplasia of the marrow substances, with thinning of the cortex of the long bones, but the diffuse invasion and infiltration of the dense parts are not seen as in leukemia. A typical feature of erythroblastic anemia is the thickening of the cranial vault. What is said of erythroblastic anemia also applies to congenital hemolytic icterus and sickle cell anemia, although the changes in the latter two conditions are seldom as marked as in erythroblastic anemia.

Evaluation of Injury in Development of Hypertrophic Arthritis.—In a series of extra-articular fractures of the bones of the lower legs that Doub and Jones studied they could find no evidence that a single severe trauma had any influence in producing hypertrophic arthritis. In one case that showed beginning changes about the knee joint the bowing of the femur was sufficient to alter the mechanics of the joint and thus account for the changes that were present. The authors selected cases of fracture so that they might be sure that sufficient trauma was applied to produce organic injury of surrounding structures. A single injury with hemarthrosis alone would not seem sufficient to produce permanent arthritic changes. It would seem that advancing age, with its attendant factors of arteriosclerosis and loss of elasticity and fibrillation of the

cartilage, is one of the greatest factors in the production of hypertrophic arthritis. This also includes long-standing wear and tear and minor traumas. The mechanical theory as to the etiology of hypertrophic arthritis must certainly be given a great deal of consideration. Faulty mechanics locally, as in the case of angulation of a long bone projecting the lines of force in such a way as to produce abnormal pressure on certain parts of the articular surfaces of the nearby joints may produce quite marked changes in the joint. The cartilage shows evidence of gradual erosion in the areas of abnormal pressure and this is followed by eburnation of the bone and marginal lipping. There may be anatomic changes also that produce more general changes, such as extensive scoliosis of the spine, which may not only affect the vertebrae themselves but may produce unequal strain on the peripheral joints and affect them also.

Removal of Lymph Nodes in Cancer of Cervix.—Taussig has applied to cancer of the uterine cervix the methods successfully employed by many persons in cancer of the mouth; namely, irradiation of the primary tumor and surrounding tissues and surgical resection of the tributary lymph nodes. He has attempted a combination of lymph node removal with irradiation in twenty-six group 2 and 3 (League of Nations classification) cases of cancer of the cervix. His experience with the eight more advanced group 3 cases is distinctly discouraging. On the other hand, the eighteen group 2 cases with but one primary death due to embolus and with eleven of the patients still clinically well, although five of these eleven showed cancer in the glands removed, justify the belief that this method should be given further trial. His recommendation is that only patients in good physical condition, preferably young and not obese, be selected and that the operator should be reasonably experienced in pelvic cancer surgery. With these limitations, it is fair to hope that by this method the percentage of cures in group 2 cases of cancer of the cervix may be materially increased.

Archives of Dermatology and Syphilology, Chicago

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The Tyranny of Words. C. M. Williams, New York.—p. 545.
Inhalations of Ethyl Iodide in Fungous Infections: Further Studies. J. H. Swartz, with assistance of Margaret Reilly, Boston.—p. 551.
Some Quacks in Old London and Morbus Gallicus. W. R. Riddell, Toronto.—p. 556.
*Estrogenic Substance in Blood of Patients with Acne. T. Rosenthal and T. Neustaedter, New York.—p. 560.
The Hôpital Saint-Louis: Historical Sketch. B. B. Beeson, Chicago.—p. 563.
Exclusion of Neurosyphilis by Means of the Hinton Reaction of Blood. J. L. Grund, Boston.—p. 569.
Contact Dermatitis Due to Crude Petroleum. J. M. Adams, New Orleans, and F. L. Irby, El Dorado, Ark.—p. 573.
Blood and Oxygen Supply of Skin. F. R. Schmidt, Chicago.—p. 576.
*Relation of Adrenal Glands to Hypertrichosis: Results of Irradiation of Adrenals and Review of Literature. H. D. Niles, New York.—p. 580.
Primary Complex of Tuberculosis of Skin: Review of Literature. H. E. Michelson, Minneapolis.—p. 589.
*Enlargement of One Sternoclavicular Articulation as Valuable Clinical Sign of Late Prenatal (Congenital) Syphilis. M. Dorne and S. J. Zakon, Chicago.—p. 602.
Differentiation of Sharply Outlined Eczematoid Patches. E. D. Chipman, San Francisco.—p. 605.
Meadow Grass Dermatitis (Dermatitis Bullosa Striata Pratensis). E. F. Corson, Philadelphia.—p. 616.
Mixed Tumors of Palate. A. B. Abshier, New York.—p. 622.

Estrogenic Substance in Blood of Patients with Acne.—By means of the method of Frank and Goldberger in the determination of values for estrogenic substance in the blood of girls with acne, Rosenthal and Neustaedter obtained results that paralleled closely the earlier work on estrogenic substance in the urine determined according to the technic of Kurzrok and Ratner. This leads them to believe that associated with acne there is abnormality of formation or of utilization of the sex hormone. Although their series of cases (twenty-nine) was small, they believe that it can be assumed that a definite relationship exists and that a deficient secretion of the follicle-ripening hormone may prove to be the direct or indirect factor in the cause of one type of acne. In the course of routine filtered roentgen therapy in the treatment of acne it is conceivable that the pituitary gland is affected by the relatively low dosage of irradiation administered and in consequence induces a normal ovarian response.

Relation of Adrenals to Hypertrichosis.—On the assumption that benign adrenal hyperactivity might cause hypertrichosis without the other symptoms which occur with tumors of these glands, Niles treated twelve patients having hypertrichosis with supposedly inhibitory doses of roentgen rays to the adrenals. They received from one to nine treatments, the average number being 3.83. Some patients were given a maximal dose once a month; others, small cumulative doses three times a week, and some, both types of treatment. Although with both procedures a few patients showed a slight loss of superfluous hair after the first one or two treatments, this did not continue, and the final result was unsatisfactory in all the treated patients. In spite of these results, the author still believes that hyperactivity of the adrenals may be a factor in some cases of hypertrichosis. Failure may have been due to insufficient dosage or improper intervals between treatments, although several patients received all the radiation that was considered safe. It also may have been due to the fact that in these patients some other gland than the adrenals was at fault. He believes that the ultimate satisfactory treatment of this condition will be from the endocrine point of view.

Enlargement of One Sternoclavicular Articulation in Prenatal Syphilis.—Dorne and Zakon present the observations in a group of twelve patients demonstrating enlargement of the sternal end of the right clavicle as a sign of prenatal syphilis. These patients are all persons with recognized prenatal syphilis whom they have had under observation and treatment for varying periods and who also present other signs of prenatal syphilis. The enlargement of the sternal end of the clavicle reaches a permanent stage about the age of puberty and hence becomes a valuable permanent stigma of prenatal syphilis.

Archives of Internal Medicine, Chicago

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*Treatment of Severe Diabetic Acidosis: Comparison of Methods, with Particular Reference to Use of Recemic Sodium Lactate. A. F. Hartmann, with technical assistance of Marie Morton, St. Louis.—p. 413.
*Differential Diagnosis Between Cerebral Hemorrhage and Cerebral Thrombosis: Clinical and Pathologic Study of Two Hundred and Forty-Five Cases. C. D. Aring and H. H. Merritt, Boston.—p. 435.
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Experimental Concentric and Eccentric Cardiac Hypertrophy in Rats. D. A. Rytand and W. Dock, San Francisco.—p. 511.
Studies of Hepatic Function: II. In Portal Cirrhosis and Congestive Heart Failure. A. Cantarow, Philadelphia.—p. 521.
Peripheral Vascular Diseases: Review of Some of Recent Literature with Critical Review of Surgical Treatment. G. W. Scupham and G. de Takáts, Chicago.—p. 530.

Treatment of Severe Diabetic Acidosis.—As a result of a study of eighty-six patients with diabetic acidosis, the method of treatment that Hartmann recommends includes: 1. Immediate parenteral administration (one half intravenously, the remainder subcutaneously and intraperitoneally) of 60 cc. of a sixth-molar solution of racemic sodium lactate per kilogram of body weight. 2. Immediate administration of 2 units of insulin per kilogram of body weight. 3. Administration of 40 cc. of Ringer's solution per kilogram of body weight as soon after the administration of sodium lactate as possible. 4. Repeated administration of insulin six hours later in a dose of 0.5 unit per kilogram of body weight. 5. Transfusion of citrated whole blood or plasma (20 cc. per kilogram of body weight) if edema due to reduced plasma protein develops.

Differential Diagnosis Between Cerebral Hemorrhage and Cerebral Thrombosis.—Aring and Merritt present an analysis of the data obtained from the records of 245 cases of cerebral vascular lesion studied clinically and at necropsy. 1. Cerebral vascular accidents are rare in patients below the age of 40, but cerebral hemorrhage occurs more frequently than cerebral thrombosis in the decade from 40 to 50. 2. The occurrence of a sudden severe headache or vomiting at the onset is strongly in favor of a diagnosis of cerebral hemorrhage. Convulsions are more frequent in cases of cerebral hemorrhage. The convulsions that occurred in cases of cerebral thrombosis were usually associated with syphilis or a lesion in the motor

cortex. The onset with immediate unconsciousness is more frequent in cases of cerebral hemorrhage (51 per cent) than in cases of cerebral thrombosis (32 per cent). The presence of coma on the patient's admission to the hospital is probably a more reliable index to the relative frequency of cerebral hemorrhage. Signs of progression of the cerebral vascular lesion after the onset are more frequent in cases of cerebral hemorrhage. 3. Abnormalities in the depth, rate, rhythm and sound of the respirations are more frequent in cases of cerebral hemorrhage. 4. The systolic blood pressure was greater than 200 mm. in 41 per cent of the cases of cerebral hemorrhage, as compared with 26 per cent of the cases of cerebral thrombosis. Cerebral hemorrhage or cerebral thrombosis is not rare in a patient with normal blood pressure. 5. There was no evidence of arteriosclerosis in 10 per cent of the cases of cerebral hemorrhage, as compared with 1 per cent of the cases of cerebral thrombosis. 6. Abnormalities in the eyes are found more frequently in cases of cerebral hemorrhage. 7. Stiffness of the neck is usually indicative of a cerebral hemorrhage. It was found in 55 per cent of the cases of cerebral hemorrhage and in only 7 per cent of the cases of cerebral thrombosis. 8. The bilateral occurrence of the Babinski sign was noted almost twice as often in cerebral hemorrhage as in cerebral thrombosis. 9. The initial leukocyte count was markedly increased in 55 per cent of the cases of cerebral hemorrhage, as compared with 10 per cent of the cases of cerebral thrombosis without complications. 10. The cerebrospinal fluid pressure was increased in 57 per cent of the cases of cerebral hemorrhage and in 22 per cent of the cases of cerebral thrombosis. In 38 per cent of the cases of cerebral hemorrhage the cerebrospinal fluid pressure was greater than 300 mm., and in 18 per cent the pressure was greater than 400 mm. In the cases of cerebral thrombosis a pressure greater than 300 mm. was rare and a pressure greater than 400 mm. did not occur. A grossly bloody fluid was found in 74 per cent of the cases of cerebral hemorrhage, and it was rarely if ever found in cases of cerebral thrombosis. 11. In 50 per cent of the cases of cerebral hemorrhage the patient died within four days of the onset, and in only 28 per cent of the cases of cerebral thrombosis did the patient die in this period. Cerebral vascular lesions do not cause sudden death.

Arch. of Physical Therapy, X-Ray, Radium, Chicago

16: 513-576 (Sept.) 1935

Unemployability, a Medical Problem. B. Fantus, Chicago.—p. 517.
Fever Therapy in Pelvic Conditions: Results of Experimental and Clinical Studies. W. Bierman, E. A. Horowitz and C. L. Levenson, New York.—p. 520.
Physical Treatment in Postural Defects. Helen D. Denniston, Madison, Wis.—p. 525.
Physiologic Effects of Acetyl-Beta-Methyl-Choline Chloride by Iontophoresis: Preliminary Report. A. J. Kotkis and R. H. Melchionna, with technical assistance of W. F. Alexander and J. Lucido, St. Louis.—p. 528.
Underwater Therapy in Chronic Arthritis. E. M. Smith, Hot Springs, Ark.—p. 534.
Treatment of Arthritis with Massive Doses of Vitamin D. I. Dreyer and C. I. Reed, Chicago.—p. 537.
Some Effects of Electric Currents on Human Respiratory Movements. H. Neifeld, Brooklyn.—p. 544.
Ionization Treatment of Hay Fever. J. R. Walker, B. F. Walker and G. W. Walker, Fresno, Calif.—p. 549.
Use of Iontophoresis. H. L. Levant, New York.—p. 552.
Roentgenographic Studies of Colon with Double Contrast Enema. J. Gershon-Cohen, Philadelphia.—p. 555.

Iowa State Medical Society Journal, Des Moines

25: 471-520 (Sept.) 1935

Treatment of Acute Nephritis in Children. C. A. Aldrich, Winnetka, Ill.—p. 471.
Otitis Media: Its Management. R. Stahr, Fort Dodge.—p. 475.
Management of Respiratory Infections from Standpoint of Ventilation and Drainage. J. V. Treynor, Council Bluffs.—p. 477.
Statistical Study of Cases Seen in Allergy Clinic at the University Hospital 1933-1934. Julia Cole, Iowa City.—p. 479.
Headache: Differential Diagnosis in Periodic Types. T. R. Gittins, Sioux City.—p. 481.
Complications of Specific Urethritis. G. D. Jenkins, Burlington.—p. 488.
Purpura Complicated by Cerebral Hemorrhage and Gangrene of Lower Extremities. M. G. Meyer, Marshalltown.—p. 491.
Hypothyroidism in Pregnancy. W. O. Purdy, Des Moines.—p. 493.

Journal of Allergy, St. Louis

6: 517-614 (Sept.) 1935

Observations on Nature of House Dust Allergen. M. B. Cohen, T. Nelson and B. H. Reinarz, Cleveland.—p. 517.
Diphtheria Immunization of Allergic and Nonallergic Individuals by Intracutaneous Injection of Alum-Precipitated Toxoid. R. A. Kern, J. Crump and T. A. Cope, Philadelphia.—p. 525.
Studies in Absorption of Undigested Proteins in Human Beings: V. New Technic for Quantitatively Studying Absorption and Elimination of Antigens (Preliminary Report). A. Walzer and M. Walzer, Brooklyn.—p. 532.
Studies in Sensitization: Influence of Occupation on Sensitization in Man as Determined in Study of Thirty-Two Bakers. A. Colmes, B. T. Guild and F. M. Rackemann, Boston.—p. 539.
Ragweed (Contact) Dermatitis Produced Experimentally in Guinea-Pig. L. A. Brunsting and R. J. Bailey, Rochester, Minn.—p. 547.
Permanent Results Following Treatment for Late Hay Fever. A. Vander Veer, New York, and J. A. Clarke Jr., Philadelphia.—p. 551.
*Surgical Anesthesia Deliberately Induced by Ether for Semipermanent Relief of Chronic Intractable Bronchial Asthma: Preliminary Report. I. S. Kahn, San Antonio, Texas.—p. 556.
Studies on Relation of Micro-Organisms to Allergy: II. Rôle of Yeasts in Allergy (Preliminary Report). S. M. Feinberg and H. T. Little, Chicago.—p. 564.
Wheat Millers' Asthma. W. W. Duke, Kansas City, Mo.—p. 568.
Trichophytin Hypersensitiveness: Report of Case with Immediate or Reaginogenic Type of Reaction. W. J. Tomlinson, Philadelphia.—p. 573.
Patch Tests with Lacquers. L. Goldman, Cincinnati, and H. Pfosi, Zurich, Switzerland.—p. 579.

Anesthesia for Relief of Asthma.—Kahn did not secure prolonged relief in chronic intractable bronchial asthma lasting months, as was hoped for, as a result of surgical anesthesia by ether administration. The amount and the duration of relief obtained would, however, conservatively indicate that in surgical ether anesthesia the allergist possesses another weapon, at least in some instances, of decided value in breaking the recurrent asthmatic paroxysm habit of pollen etiology when other simpler measures have failed. This relief measure may have a far wider field of usefulness in intractable asthma of other etiologies, specific or nonspecific, and may also explain the correction of asthma and other hypersensitivity conditions heretofore ascribed to surgical intervention, intentional or coincidental. While ether anesthesia, both by rectum and by inhalation, has undoubtedly been previously employed successfully to relieve a severe acute asthmatic paroxysm, the author believes that his three cases are the first instances of deliberately induced surgical ether anesthesia for the sole purpose of securing relief of a semipermanent character in chronic daily recurring asthma, the anesthetic being administered at the time when the patient was actually comfortable and completely or almost completely symptom free.

Journal of Bacteriology, Baltimore

30: 213-334 (Sept.) 1935

Bacterial Variation: Inquiry into Underlying Principles Governing Cell Morphology of Bacillus Megatherium. L. F. Rettger and Hazel B. Gillespie, New Haven, Conn.—p. 213.
Differences in Effect of Phenyl Mercuric Chloride on Different Races of Bacteriophage and Similarity in Effect on a Phage and Its Homologous Organism. N. R. Goldsmith, Pittsburgh.—p. 237.
Studies on Growth Phases of Clostridium Septicum. A. Hoyt, Los Angeles.—p. 243.
*Bactericidal Principle in Excretions of Surgical Maggots Which Destroys Important Etiologic Agents of Pyogenic Infections. S. W. Simmons, Washington, D. C.—p. 253.
Antigens of Salmonella Anatum. P. R. Edwards, Lexington, Ky.—p. 269.
Gram-Positive Non-Spore Bearing Anaerobic Bacilli of Human Feces. A. H. Eggerth, Brooklyn.—p. 277.
Study of Microbic Variation in Yellow Pigment-Producing Coccus. F. E. Colien, Minneapolis.—p. 301.
Occurrence of Strain of Azotobacter Chroococcum Which Does Not Ferment Mannitol. N. R. Smith, Washington, D. C.—p. 323.

Bactericidal Principle in Excretions of Surgical Maggots.—Simmons obtained a potent bactericide from surgical maggots of the species Lucilia sericata, and the technic for its collection is described. Bactericidal tests with this substance were conducted with seven species of bacteria of etiologic importance in pyogenic infections. The results showed that exposures of from five to ten minutes were usually sufficient to give a 100 per cent kill of dense saline and broth suspensions of the organisms. The addition of organic material apparently has less effect on the potency of this material than on that of ordinary disinfectants. The active principle is of a nonviable nature and is not destroyed by autoclaving for twenty minutes

at a pressure of 10 pounds. No indication of lysis could be demonstrated, and the thermostability and other reactions of this substance rule out the possibility of a bacteriophage as the active principle. The material was desiccated, and in this dry condition it apparently maintains its potency over a longer period than when in aqueous solution. The remarkable bactericidal potency of the excretions against Staphylococcus aureus, hemolytic streptococci and Clostridium Welchii accounts in part for the gratifying results obtained in such infections under maggot therapy. The investigation reveals a field with potentialities of producing other new and useful disinfectants from living organisms.

Journal of Industrial Hygiene, Baltimore

17: 185-242 (Sept.) 1935

Heated Globe Thermometer for Evaluating Environmental Conditions of Comfort and for Studying Radiation-Convection Effects. C. P. Yaglou, Boston.—p. 185.

Antirachitic Effect of Ultraviolet Radiation Transmitted by a Smoky Atmosphere. H. M. Barrett, Toronto.—p. 199.

Comparison of Mortality Rates from Bronchitis and Pneumonia, and from Respiratory Tuberculosis, in Coal Miners and Other Residents in the Counties of Nottingham, Derby, Glamorgan and Monmouth, 1921-1923. P. Stocks, London, England.—p. 217.

Effects of Inhalation of Hydrogen Fluoride: II. Response Following Exposure to Low Concentration. W. Machle and K. Kitzmiller, Cincinnati.—p. 223.

Id.: III. Fluorine Storage Following Exposure to Sublethal Concentrations. W. Machle and E. W. Scott, Cincinnati.—p. 230.

Journal of Pediatrics, St. Louis

7: 303-434 (Sept.) 1935

Recollections and Reflections on Forty-Five Years of Artificial Infant Feeding. J. L. Morse, Boston.—p. 303.

Treatment of Hyperthyroidism in Children and Younger Adolescents. E. Rose, Elizabeth Kirk Rose and E. P. Pendergrass, Philadelphia.—p. 325.

Observations on Prophylactic Value of Specific Immune Serum in Experimental Poliomyelitis. E. W. Schultz and L. P. Gebhardt, Stanford University, Calif.—p. 332.

Effects of Gelatin Hydrating Solution on the New-Born. M. J. E. Senn, New York.—p. 352.

Nomograms for Calcium Ion Concentration of Blood and Body Fluids. I. N. Kugelmass, New York.—p. 358.

*Common Disorders of the New-Born: Their Diagnosis and Treatment. B. E. Bonar, Salt Lake City.—p. 362.

Transient Localized Cyanosis of the New-Born. L. H. Smith, Portland, Ore.—p. 376.

Psychologic Problems in Adolescent. B. I. Beverly, Chicago.—p. 380.

*Leukemia in Childhood with Onset Simulating Rheumatic Disease. C. H. Smith, New York.—p. 390.

*Estrogenic Treatment of Gonorrheal Vaginitis: Report of Seventeen Cases. L. E. Goldberg, C. L. Minier, Newark, N. J., and E. L. Smith, Belleville, N. J.—p 401.

Disorders of the New-Born.—Bonar states that, since reduction of neonatal morbidity and mortality rates is dependent largely on the prevention or early diagnosis and treatment of disorders of the new-born by the general practitioner, his first duty is to determine the seriousness of certain symptoms promptly before the condition of the infant becomes grave. This demands a thorough physical examination and continued observation of the baby rather than delegating the entire responsibility to untrained or less competent attendants. Once the physician has found that the symptoms denote the existence of definite disease, the decision must rest with him whether or not he himself desires or has the equipment to diagnose and treat the infant. If not, the patient should be referred promptly to a capable consultant, for at no other time of life is procrastination so likely to result in an unfavorable outcome. Particularly is this true of certain infections and of a few disorders producing such common symptoms as cyanosis, vomiting and hemorrhage, for the diagnosis and treatment of which simple diagnostic and therapeutic methods applicable to practice in the home or less well equipped hospital are discussed.

Leukemia with Onset Simulating Rheumatic Disease.—Smith discusses three cases illustrating the group of children having leukemia in whom the pains in the joints are not associated with evidences of visible inflammation and clinical differentiation from rheumatic disease becomes difficult. The migratory pains in the limbs and joints are often vague, and roentgen examination of the long bones discloses no deviations from the normal. In all other respects, too, the symptomatology and physical signs resemble those cases of rheumatic disease in childhood in which joint pains are not associated with objective signs of inflammation. The history of the three cases prior to admission to the hospital so closely resembled rheumatic fever that treatment was directed toward that condition in two. The diagnosis of lymphoid leukemia was made on the recognition of the characteristic pathologic white blood cell. Cardiac signs, when present in leukemia, may be attributed to anemia. In one case remission in fever and joint pains followed the administration of salicylates. The response to salicylate therapy may perhaps be of significance, since it may differentiate the suggestive early case of leukemia with bone and joint pains from a case of true rheumatic disease. Bone and joint pain in leukemia of childhood may perhaps be explained on an anatomic basis. At birth and for the first three or four years of life, the long bones are entirely filled with actively functioning red marrow. At about 7 years of age fat appears, which is observed grossly at puberty. The conversion of active red marrow to nonfunctioning yellow marrow is complete at 21 years of age, with the exception of residual islands of red marrow in the upper end of the proximal long bones. It is conceivable that the encroachment on actively functioning hematopoietic tissue within the inelastic bony skeleton of the child produced by the invasion and multiplication of leukoblastic cells accounts for pain in the extremities. The pain in the initial pathologic phase of leukemia is due to increased pressure within the bone caused by crowding of the multiplying cells. As the pathologic process continues, rarefaction occurs within the bone. The next step consists of the spread of leukemic cells beyond the cortex and results in an elevation of the periosteum. In the cases cited the patients did not survive beyond the stage of infiltration, so that the roentgenogram could throw no light on the pathologic process responsible for the clinical symptoms. During the period in which the diagnosis of rheumatic disease seems likely, abnormal leukocytes make their initial appearance in the circulating blood. Abnormal lymphocytes possessing distinctive microscopic features were present in the blood smear in the three cases. The cytoplasm was usually scanty and took on a deeply basophilic stain. Vacuoles were present in some cells, and in others the cytoplasm was marked by its content of coarse azure granules. The immature lymphocytes appeared in varying percentages in the peripheral blood of all cases. The diagnosis of leukemia should be considered with the recognition of these cells even when they are few in number in the differential smear. The differentiation between cells of the myeloid and lymphoid series, as well as the recognition of the identifying characteristic of the abnormal cells, was facilitated by a combination of several technics.

Estrogenic Treatment of Gonorrheal Vaginitis.—From their observations in seventeen cases of gonorrheal vaginitis in children, Goldberg and his associates are of the opinion that short or long duration of the disease prior to the administration of amniotin is not a factor in effecting a cure. The results from the oral method do not differ materially from those by hypodermic injections. The former method would appear to be preferable because of the natural disinclination of a child to be pierced by a needle and also because of the slight danger of an associated abscess, which occurred in one of their cases. The time limit, which is an important factor in therapy, is unquestionably much shortened in effecting cures by amniotin as compared with that by the old methods. Protracted treatment is a disadvantage in any disease, particularly in pediatric practice. The recurrences after this kind of treatment are in all probability much less than with any other type of therapy. The success of the estrogenic treatment, in their opinion, depends on the conversion of the epithelial lining of the vagina from an immature type of childhood to an adult type, as demonstrated by Lewis. They are in accord with Huberman and Israeloff, who believe that the acquired layer of cornified epithelial cells acts as a protective barrier against the rapidly multiplying gonococci, thus preventing reinfection. The infecting organisms that were already lodged in the subepithelial spaces have been destroyed. No ill effects and no definite change in the genitals or in the mammary glands were observed in any of these children given estrogenic substance despite the large dosage that was sometimes necessary. Possibly, injurious effects may be delayed in appearing. The last biopsies taken revealed a decided retrogression in the epithelial layers from

the adult type back toward the immature type of the vaginal epithelial tissue of childhood. In a subsequent series the authors observed enlargement of the breasts in five of eleven cases under treatment with amniotin.

Journal of Pharmacology & Exper. Therap., Baltimore

54: 1-126 (Sept.) 1935

*Relative Efficiency of Series of Analeptics as Antidotes to Sublethal and Lethal Dosages of Pentobarbital, Chloral Hydrate and Tribrom-Ethanol ("Avertin"). O. W. Barlow, Cleveland.—p. 1.
Studies on Ether Dosage After Preanesthetic Medication with Narcotics (Barbiturates, Magnesium Sulphate and Morphine). F. A. Calderone, Westbury, Long Island, N. Y.—p. 24.
Pharmacologic Action of Alkaloids of Fumaraceous Plants: II. Corydine. R. A. Waud, London, Ont.—p. 40.
Studies on Barbiturates: XII. Factors Governing Distribution of Barbiturates. J. M. Dille, C. R. Linegar and T. Koppanyi, Washington, D. C.—p. 46.
Id.: XIII. Analysis of Duration of Action of Barbiturates. T. Koppanyi, C. R. Linegar and J. M. Dille, Washington, D. C.—p. 62.
Narcosis and the Chronaxie. P. K. Knoefel, Nashville, Tenn.—p. 72.
Alcohol Injected Intravenously: Effect of Habituation on Rate of Metabolism. H. W. Newman and W. C. Cutting, San Francisco.—p. 82.
Sex Variation in Ketonuria of Ether Anesthesia in Rats. G. A. Emerson, Nashville, Tenn.—p. 90.
Quantitative Assay for Testicular Hormone by Comb Growth Reaction: Second Communication. T. F. Gallagher and F. C. Koch, Chicago.—p. 97.
Comparative Study of Choline and Certain of Its Analogues: I. Pharmacologic Activity of Acetylphosphocholine and Acetylarsenocholine Relative to Acetylcholine. A. D. Welch and M. H. Roepke, Toronto.—p. 118.

Analeptics as Antidotes to Pentobarbital, Chloral Hydrate and Tribrom-Ethanol.—Barlow studied the effect of various analeptics in albino rabbits against lethal doses of pentobarbital, chloral hydrate and tribrom-ethanol. The experimental procedures were of two types. In one maximally hypnotic doses of each agent were administered and the course of hypnosis noted. The antidotal effects of one of a series of analeptics was then determined as judged by deviations from the usual course of hypnosis. The analeptic measures tested included artificial respiration, exposure to an atmosphere containing 90 parts of oxygen and 10 parts of carbon dioxide, and medication with one of the various antidotal agents. In the other experiment the 100 per cent lethal dosage of the depressants was determined. The influence of the analeptics of definite value, as determined by the results of the first study, on the course of poisoning from lethal doses of each of the three hypnotics was then determined. Under such conditions, any recoveries noted following treatment could be attributed to the effects of the analeptic measures alone. From five to ten rabbits were used in each series of experiments with each dosage of the several analeptics or other resuscitation measures. The report represents in excess of 1,600 experiments.

Journal of Urology, Baltimore

34: 289-348 (Oct.) 1935

Renal Calculi: Etiology and Prophylaxis. M. B. Wesson, San Francisco.—p. 289.
Replacement Lipomatosis of Kidney. E. W. Exley and T. J. Devereaux, Minneapolis.—p. 296.
Cystitis Follicularis. F. Hinman, San Francisco, and J. Cordonnier, East St. Louis, Ill.—p. 302.
Cast of Vesical Calculus Weighing Almost Two Pounds. J. Daland, Philadelphia.—p. 309.
Novel Way of Ridding Bladder of Paraffin. W. G. Schulte, Salt Lake City.—p. 313.
*Retention of Urine Due to Ephedrine, with Discussion of Mode of Action and Therapeutic Usage. J. J. Valentine, New York, and J. S. Fitzgerald, Utica, N. Y.—p. 314.
Suppurative Orchitis: Its Diagnosis and Treatment. C. P. Mathé, San Francisco.—p. 324.
New Cystoscope Holder for Demonstration Purposes. M. D. F. Blasucci, New York.—p. 337.
Simplified Interpretation of Cystometrograms: Three-Factor Principle. M. Muschat, Philadelphia.—p. 340.
Converting or Observation Sheath for Stern-McCarthy Resectoscope: Greater Precision in Visualizing Results of Resection. F. E. B. Foley, St. Paul.—p. 344.

Retention of Urine Due to Ephedrine.—Valentine and Fitzgerald state that acute retention of urine due to the action of ephedrine is of significance to urologists because of the widespread use of this drug in asthma and associated conditions. They present three cases with a discussion of the probable mode of action. An attempt was later made to utilize this principle in the treatment of "dribbling" or weak sphincteric control. In the first case a hypodermic injection caused symptoms in less than an hour. The vesical content could not have been greatly increased in this period. Severe pain with but 16 ounces (480 cc.) of urine in the bladder was noted in the second case. The third patient had pain and retentive symptoms with but 2 ounces (60 cc.) of urine in the bladder. From reported and their own observations, the authors are led to conclude that the retention will occur only in those patients who are developing prostatism or reaching the prostatic age. Red blood cells and albumin were present in all three cases and cleared on cessation of the drug. After observing the retention caused by ephedrine, the authors decided to test its value when there is need of better sphincteric control; i. e., in dribbling and in incontinence. They used it in five cases—all ambulatory. No improvement was noticed in two patients. Both were old men who were incontinent in their first two months following suprapubic prostatectomy. The internal sphincter was destroyed and the external sphincter relaxed. In another, an old man who had had perineal prostatectomy, improvement was definite, but over a long period of time. Such change was no more rapid than is frequently observed postoperatively without ephedrine. In the remaining two cases the effect was more striking. In one an internal sphincter traumatized by resection was made more tonic. Urination became more difficult, the residual increased and the dribbling ceased. In the other case the incontinence predicated on an old lesion of the central nervous system was markedly improved. The tone of the internal sphincter was increased enough to carry on its normal function.

Kentucky Medical Journal, Bowling Green

33: 395-438 (Sept.) 1935

Potential and Skin Cancer. W. J. Young, Louisville.—p. 429.
Sixty Degrees Convergent Strabismus Corrected with Operation. J. K. Hutcherson, Louisville.—p. 436.

Medical Annals of District of Columbia, Washington

4: 231-262 (Sept.) 1935

Meningitis in Children: Review of Three Hundred and Thirty-One Cases. J. W. Lindsay, E. C. Rice and M. A. Selinger, Washington.—p. 231.
The Varicose Ulcer. A. Horwitz, Washington.—p. 243.
Aortic Embolectomy: Report of Case. H. H. Kerr, Washington.—p. 249.
Colostomy Preliminary to Ureteroenteric Anastomosis: Report of Case. W. R. Morris, Washington.—p. 251.
Massive Lymphosarcomatous Invasion of the Heart: Report of Case. W. M. Yater and H. H. Leffler, Washington.—p. 253.

Nebraska State Medical Journal, Lincoln

20: 361-408 (Oct.) 1935

Inventory of Surgical Considerations Which Are Fundamental to Further Progress in Our Art. W. Bartlett, St. Louis.—p. 361.
*Water Balance in Surgical Patients. F. A. Coller, Ann Arbor, Mich.—p. 365.
Operative Treatment of Patellar Fracture. C. G. McMahon, Superior.—p. 368.
Interchangeable Signs and Symptoms Between Circulatory and Digestive Systems. F. W. Niehaus, Omaha.—p. 375.
Postoperative Treatment of Peritonitis. C. C. Johnson, Lincoln.—p. 379.
Disease of Childhood from the Standpoint of a General Practitioner. A. E. Buchanan, Fremont.—p. 382.
Anorexia in Children. H. B. Hamilton, Omaha.—p. 385.
Refinements in Tear Sac Surgery. W. H. Stokes, Omaha.—p. 388.
Demonstration of Results of Radiation Therapy in Hopelessly Inoperable Carcinomas. A. F. Tyler, Omaha.—p. 394.
Obstructive Dyspnea with Illustrative Cases of Various Types. W. A. Cassidy, Omaha.—p. 396.
Autogenous Streptococcus Vaccines. M. J. Breuer, Lincoln.—p. 398.
Importance of Fungus as Cause of Asthma in Nebraska. G. R. Underwood, Lincoln.—p. 400.
Meckel's Diverticulum Causing Intestinal Obstruction: Report of Case. C. Andrews, Lincoln.—p. 401.

Water Balance in Surgical Patients.—Coller emphasizes that, while the normal person at rest or during light activity loses from 800 to 1,500 cc. of water by vaporization from the skin and lungs, the surgical patient with infection, fever or hyperthyroidism or under abnormally warm environmental conditions will lose from 1,500 to 3,000 cc. daily. The abnormal losses of fluid are important sources of water depletion to surgical patients. Vomiting, diarrhea, drainage from intestinal and biliary fistulas or massive exudations from inflammatory surfaces, such as burns, may carry away large amounts of fluid

daily. With the water loss in these instances there is also an important loss of body fluid substance. From the standpoint of water alone the losses are serious, because they carry out no physiologic purpose. If all the water losses of the body are not considered in estimations of the water requirements of surgical patients, a depletion of body fluids is likely to occur. On the basis of two clinical experiments the author has used 6 per cent of the total body weight in calculating the water requirements of the body tissues in several dehydrated patients. This estimation along with a consideration of the amount of fluid for vaporization, for abnormal losses and for a reasonable output of urine, gave him a rather exact indication of the amount of fluids needed to restore the dehydrated patient to the normal condition. The maintenance of a satisfactory water exchange is fundamentally the maintenance of a satisfactory urine output. The kidney functions with the water available after all the other channels of water excretion have been cared for. For the sick person he considers a satisfactory urine output to be about 1,500 cc. a day. Normal kidneys working at a maximal concentration require close to 500 cc. of water a day to excrete an average amount of waste material. In extensive kidney disease when the concentration power has been considerably impaired, three times as much water is required to carry out the same function. The 1,500 cc. volume then is ample to provide for the kidney function of practically all persons. An abundance of water can be best supplied by the use of a 5 per cent solution of dextrose. The dextrose is rapidly oxidized and the water is left available for all body needs. It is the author's custom to use sodium chloride solution for the parenteral administration of fluids only when the chemistry of the blood has shown that salt is needed. Too much salt solution may be the cause of edema.

New England Journal of Medicine, Boston

213: 593-638 (Sept. 26) 1935

Expected Lags Between Clinical Diagnosis and X-Ray Confirmation. H. A. Christian, Boston.—p. 593.
Electrosurgical Cholecystectomy: I. Experimental Observations. L. R. Whitaker, Boston.—p. 596.
*Anterior Poliomyelitis, with Reference to Occurrence of Two Attacks in Same Individual: Report of Two Cases. L. Cohen, Iowa City.—p. 601.
Torsion of Pregnant Uterus: Report of Two Cases. H. F. Day, Boston.—p. 605.
Postoperative Gas Pains. E. J. Ottenheimer, Willimantic, Conn.—p. 608.
Incarcerated Bladder in Scrotal Hernia: Case Report. F. J. Petrone, Fall River, Mass., and E. Vieira, East Providence, R. I.—p. 614.
Arteriographic Comparison of Thrombo-Angiitis Obliterans and Arteriosclerosis. E. A. Edwards, Brookline, Mass.—p. 616.
Allergy to Life: Interpretation of Neurotic Constitution. E. Moschcowitz, New York.—p. 617.
Atropine Fever in Early Infancy. C. K. Johnson, Burlington, Vt.—p. 620.

Two Attacks of Anterior Poliomyelitis in Same Individual.—Cohen points out that the immunity acquired by man as a result of one attack of anterior poliomyelitis occasionally is slow in developing. The active virus may remain in the nasopharyngeal secretion of the individual for a period up to four months following an attack, as shown by Lucas and Osgood. Therefore any relapse occurring within this period can be explained as an autoinfection of the individual by the active virus present in his own nasopharyngeal secretions, this occurring before the full development of immunity following the first attack. This does not, of course, completely eliminate the possibility that the second attack may be a reinfection from a new external source. When the interval between the two attacks is two or more years, the reinfection is undoubtedly a new one from an external source, as the active virus has experimentally never been found to be present in the nasopharyngeal secretion of a patient later than four months after the termination of the acute febrile stage of the disease in such virulence as to reproduce the disease in a monkey. There have been no cases of a second attack reported, whether a recrudescence or a reinfection, occurring in the interval between four months and two years following recovery from the first attack. Thus the author concludes that immunity to anterior poliomyelitis once it is fully developed, either as a result of an attack or a recrudescence of an initial attack, is absolute only up to a period of two years. The thirteen proved cases of reinfection with anterior poliomyelitis reported in the literature are tabulated and two new cases are cited. One of these two cases differs from all others in that there was total paralysis of two extremities and almost total paralysis of a third. Complete recovery occurred following the first attack. The three extremities that were affected as a result of the first attack were affected to practically the same degree during the course of the second attack. The fourth extremity (the left arm), which was also completely paralyzed during the course of the second attack and was not affected during the first attack, is the only one that has recovered to any appreciable degree.

New York State Journal of Medicine, New York

35: 901-950 (Sept. 15) 1935

New Scientific Method of Identification. C. Simon and I. Goldstein, New York.—p. 901.
Maternal Welfare. J. K. Quigley, Rochester.—p. 907.
Treatment of Type of Malnutrition (Simmond's Disease like) with Prepituitary Growth Hormone. L. Berman, New York.—p. 916.
School Health and the Physician. W. P. Brown, Albany.—p. 919.
Clinical and Pathologic Study of Alcoholism. L. H. Ziegler and Henrietta C. Horner, Albany.—p. 921.

35: 951-1000 (Oct. 1) 1935

Industrial Dermatoses: Causes, Prevention and Treatment. J. J. Eller and L. Schwartz, New York.—p. 951.
Hay Fever and Hyperesthetic Rhinitis: Treatment by Ionization. L. M. Hurd, New York.—p. 965.
Facts Concerning Treatment of Anemia. W. P. Murphy, Boston.—p. 973.
Chronic Appendix Syndrome. C. F. Tenney, New York.—p. 977.
Pulmonary Abscess, with Especial Reference to Packing Treatment of Connors. T. C. Case, New York.—p. 981.

Ohio State Medical Journal, Columbus

31: 729-816 (Oct. 1) 1935

Cancer of Esophagus. F. W. Dixon, Cleveland.—p. 745.
Management of Strabismus. R. F. Thaw, Akron.—p. 749.
Glycosuria in Pregnancy and Its Clinical Significance. H. J. John, Cleveland.—p. 751.
Medicolegal Aspects of Silicosis in Ohio. P. M. Holmes, Toledo.—p. 757.
*Recurrent Acute Intussusception: Treatment with Barium Enemas and Massage Under Fluoroscopic Control. M. M. Miller and C. L. Beatty, Akron.—p. 759.

Treatment of Recurrent Acute Intussusception.—Miller and Beatty state that the possibility of avoiding operation in certain selected, promptly diagnosed cases of intussusception has not been sufficiently recognized. The desirability of an effective means of relieving intussusception without repeated resort to surgery is especially great in the case of individuals with recurrent attacks. They believe that it is in such cases that the nonsurgical approach of Retan and Stephens may be of the greatest value. In their case of recurrent acute intussusception, the child had one attack at the age of 20 months and a second attack nearly three months later. In both attacks the child presented the symptoms (sudden onset, intermittent abdominal cramps, prostration and collapse) and the characteristic sausage shaped tumor mass of intussusception. In neither attack had sufficient time elapsed for the passage of mucus and blood. In both attacks the diagnosis of intussusception was confirmed by a barium sulphate fluoroscopic examination within three hours of the onset and the obstruction was relieved by extra-abdominal manipulation. The use of barium sulphate enemas and massage under the fluoroscope appears to be a valuable procedure deserving a therapeutic trial in all very early cases of acute intussusception.

Pennsylvania Medical Journal, Harrisburg

38: 929-1088 (Sept.) 1935

Deforming Scars: Their Causes, Prevention and Treatment.. J. P. Webster, New York.—p. 929.
Lightning and Electric Cataract. J. V. Connole, Wilkes-Barre.—p. 939.
Treatment of Fractures of Pelvis and Their Complications. G. C. Weil, J. P. Henry and H. W. Rushbridge, Pittsburgh.—p. 942.
Treatment of Pharyngeal Diverticula by Combined One Stage Closed Method. T. A. Shallow, Philadelphia.—p. 946.
Blood Pictures in Infections: From the Standpoint of the General Practitioner. M. M. Strumia, Bryn Mawr.—p. 950.
Ureteral Strictures and Their Treatment. B. M. Hance, Easton.—p. 953.
Development of Roentgen and Radium Therapy. E. P. Pendergrass, Philadelphia.—p. 956.
Diagnosis and Modern Treatment of Amebiasis. J. A. Kolmer, Philadelphia.—p. 959.
Fractures of Both Bones of Forearm. J. Howorth, Wilkes-Barre.—p. 964.
Postvaccinal Encephalitis in Siblings: Case Reports. J. D. Sturgeon Jr., Uniontown.—p. 968.

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Public Health Reports, Washington, D. C.

50: 1239-1292 (Sept. 13) 1935.

Accuracy of Certified Causes of Death: Its Relation to Mortality Statistics and International List. H. Emerson, G. Baehr, W. J. V. Deacon, W. H. Guilfoy, T. F. Murphy, C. Norris, J. O. Spain, W. R. Tracy, Jessamine S. Whitney, R. C. Williams, W. R. Williams and G. H. Van Buren.—p. 1239.

Radiology, Syracuse, N. Y.

25: 261-390 (Sept.) 1935

Oral Cholecystography: Evaluation of Method and Suggestions for New Nomenclature. E. P. Pendergrass and P. J. Hodes, Philadelphia.—p. 261.

Primary Results of Teleradium Treatment in Cancer of Larynx and Hypopharynx at the Radiologic Clinic of the University of Lund, 1931-1933. L. Edling, Lund, Sweden.—p. 267.

Fibrin Bodies in Artificial Pneumothorax. H. K. Taylor and I. D. Bobrowitz, New York.—p. 274.

Daphnia Magna as Biologic Dosimeter for Soft X-Rays. H. Kersten and G. G. Snider, Cincinnati.—p. 285.

Hypertrophic Osteo-Arthropathy. E. L. Rypins, Bloomington, Ill.—p. 289.

Evipal Anesthesia for Radium Therapy. G. H. Twombly and G. T. Pack, New York.—p. 295.

*Analysis of Cholecystographic Findings in Three Hundred Cases, with Comparison of Operative Findings in Cases Operated On. J. B. Johnson and H. C. Harrell, Galveston, Texas.—p. 300.

Pancreatic Cysts. S. Bruck, Philadelphia.—p. 303.

*Actinomycosis and Roentgen Therapy, with an Illustrative Case. H. Fried, New York.—p. 308.

Ureteral Obstruction in Carcinomatous Cervix. L. S. Drexler, Brooklyn.—p. 315.

Treatment of Carcinoma of Bladder with Radon Tubes. A. B. Friedman, New York.—p. 319.

Sarcoma of Antrum, Complicated by Pregnancy, Treated by Irradiation: Case. A. Kean, New York.—p. 321.

Custodial Care of Cancer Patients. A. Lieff, New York.—p. 325.

Some Lawsuits I Have Met and Some of the Lessons to be Learned from Them. I. S. Trostler, Chicago.—p. 329.

Observations on Rats with Transplantable Fibrosarcoma Treated with Cevitamic (Ascorbic) Acid. J. A. Pollia, Los Angeles.—p. 338.

Observations on Use of 800,000-Volt Roentgen Rays in Radiation Therapy. H. Schmitz, Chicago.—p. 341.

Osteopoikilosis. I. S. Hirsch, New York.—p. 349.

Analysis of Cholecystographic Observations.—Johnson and Harrell employ the oral and intravenous administration of the dye in cholecystography and keep the patient in the department throughout the time consumed by the examination. The oral method was used in 189 cases, 153 of which were found to be normal. Two of these were diagnosed as poor function, and as no intravenous study was done the diagnosis remained doubtful. Cholelithiasis was demonstrated in fifteen cases by the oral method alone. A diagnosis of "pathologic gallbladder" was made in an additional nineteen cases in which the viscus failed to be filled with the dye. In four cases a negative diagnosis made by the oral route was questioned clinically but was substantiated by intravenous study. In nine cases no shadow was observed after the oral administration of the dye, only to be followed by normal observations after the dye was given intravenously. In two cases following oral dye in which the diagnosis was doubtful, a diagnosis of disease of the gallbladder could be made by the intravenous method. In one case in which the gallbladder failed to fill after oral dye there was only slight filling after the dye was given intravenously. In twenty-six cases the diagnosis of disease of the gallbladder was arrived at after the giving of dye by mouth was confirmed by intravenous study. In another case, in which a normal shadow with good function was found by the oral method, an intravenous study was doubtful. In sixty cases the referring physician requested that the examination be done by the intravenous method, there being a desire for quantitative measure of liver function as well as a study of the gallbladder itself. Of these cases, thirty-five were found to be normal and twenty-eight diseased. Of the 300 patients examined, only thirty-two were operated on. In the only case in which operation was performed for possible pathologic changes of the gallbladder, despite a negative roentgen diagnosis, the gallbladder was removed and the pathologist classified the condition as chronic cholecystitis. In six other cases a negative roentgen diagnosis was confirmed. In the two cases studied orally, in which there was poor filling, operation revealed a diseased gallbladder in each instance. Of the oral examinations revealing stones, three patients were operated on and cholelithiasis was found in each instance. The other pathologic diagnosis made by the oral administration in which the viscus was filled was that of obstruction due to carcinoma of the head of the pancreas. This was confirmed by operation. Of the pathologic diagnoses made by the oral method owing to nonfilling of the organ, seven patients were operated on. All were diseased, three of them containing cholesterin stones as well. In the case doubtful by the oral method and negative intravenously, a negative operative diagnosis was made. In seven of the cases studied intravenously and orally in which a pathologic roentgen diagnosis was made, the observations were confirmed at operation. The five cases in the intravenous and pathologic group in which operation was performed were found to be pathologic.

Actinomycosis and Roentgen Therapy.—Fried states that there is unanimity of opinion that surgical drainage together with roentgen therapy can bring about a complete cure in actinomycosis without the administration of iodides. However, when iodides are given in large doses and for a long period of time they may also be very effective. It is generally accepted that the efficacy of irradiation in this disease is brought about by the indirect action of the rays, which alters or so modifies the tissues as to render them poor mediums for the growth of micro-organisms. Whether the changes produced in the tissues are physical, chemical or biologic is not known. Another contributing factor that aids the favorable action of the rays is the high degree of radiosensibility of the lesions in this disorder. Because the mode of extension of the disease is more often by continuity than through the blood vessels and lymph channels, the author found it necessary to use a special technic in which the fields of irradiation extended from 2 to 5 cm. beyond the palpable borders of the lesion, the rays being sufficiently penetrating to reach from 2 to 3 cm. beyond the depth of the lesion. The results of the treatment in his case are satisfying because a complete cure was obtained and the patient is free from any residual keloids or disfiguring scars. Hypertrophic scars resulting from actinomycosis are covered by a thin layer of epithelium and therefore require a much smaller number of roentgen exposures than in the case of ordinary spontaneous keloids. The technic of radiation therapy in this disease apparently varies with each worker. Some use the larger initial dose method, others rely on the simple fractionated dosage, while still others administer the protracted fractionated technic.

Virginia Medical Monthly, Richmond

62: 303-360 (Sept.) 1935

Serologic Tests for Enteric Fevers. A. Corpening, Richmond.—p. 303.

Fourteen Hundred and Fifteen Spinal Anesthesias, with Especial Reference to Indications, Complications and Mortality: Cases Reported and Charts. J. M. Emmett, Clifton Forge.—p. 304.

Poliomyeltis. J. A. Shield, Richmond.—p. 309.

Total Thyroidectomy for Chronic Heart Failure. D. G. Chapman, Richmond.—p. 310.

Basis For or Against Use of Digitalis in Certain Disturbances. C. C. Haskell, East Orange, N. J.—p. 317.

Diagnosis of Syphilis of Gastro-Intestinal Tract. C. Williams, Richmond.—p. 322.

Extragastric Manipulation for Removal of Foreign Bodies in Stomach by Way of Esophagus. J. Horgan, Washington, D. C.—p. 326.

Problems in Breast Feeding. J. S. Weitzel, Richmond.—p. 328.

Treatment of Habitual Abortion. H. F. Kane, Washington, D. C.—p. 334.

Anemias Dependent on Food Deficiencies. J. P. Baker Jr., Richmond.—p. 335.

New French Cardiologic Unit. T. C. Merrill, Paris, France.—p. 340.

Medical and Surgical Diathermy. P. D. Stout, Bristol, Va.-Tenn.—p. 342.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

43: 477-534 (Sept.) 1935

Preiodine and Postiodine Days: Review of Thirty-Seven Thousand Two Hundred and Twenty-Eight Cases of Goiter at the Mayo Clinic. C. H. Mayo and C. W. Mayo, Rochester, Minn.—p. 477.

Toxic Adenoma of Thyroid Gland with Associated Hypothyroidism. H. H. Searls, San Francisco.—p. 483.

Quantitative Observations on Effect of Iodine in Exophthalmic Goiter in Chicago. W. O. Thompson, S. G. Taylor 3d, Phebe K. Thompson and Lois F. N. Dickie, Chicago.—p. 489.

Malignant Goiter: Survey of Geographic Types. R. Ward, San Francisco.—p. 494.

Goiter: Clinical Analysis: Report of Unusual Cases. M. S. Rosenblatt, Portland, Ore.—p. 505.

Impedance Angle Test for Thyrotoxicosis. M. A. B. Brazier, London, England.—p. 514.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Urology, London

7: 213-312 (Sept.) 1935

Leiomyoma of Prostate Gland. F. S. Patch and L. J. Rhea.—p. 213.
Renal Adenoma. J. Carver.—p. 230.
Bilateral Urinary Calculus. H. P. Winsbury-White.—p. 235.
Endoscopic Resection for Enlarged Prostate. F. M. Loughnane.—p. 244.
Uses of Sodium Ortho-Iodohippurate in Urography. K. Heritage. —p. 255.
Elimination of Pain from Urologic Investigation. G. Parker.—p. 259.

British Medical Journal, London

2: 527-564 (Sept. 21) 1935

Pink Disease. A. J. Wood and I. Wood.—p. 527.
Prevention and Prognosis of Late Toxemias of Pregnancy. J. S. Fairbairn.—p. 531.
Ovarian and Pituitary Hormones. Margaret Fairlie.—p. 533.
*Fallacy of Sugar Tolerance Test in Diagnosis of Diabetes Mellitus. O. Leyton.—p. 536.
Stenosing Tendovaginitis at Radial Styloid: Brief Review of Some of Literature: Report of Case. W. M. Brown.—p. 538.
Cardiac Resuscitation. W. B. Primrose.—p. 540.

Sugar Tolerance Test in Diagnosis of Diabetes Mellitus.—Leyton presents five cases that disprove the opinion that the sugar content of the blood rising above 0.25 per cent, and remaining high for two hours, indicates diabetes mellitus. He believes that, among the patients of physicians who treat diabetes by restricted diet, a percentage of the patients treated most successfully who have never complained of thirst or polyuria belong to the category of those recorded here.

East African Medical Journal, Nairobi

[12]: 159-198 (Sept.) 1935

Observations on Ancylostomiasis and Anemia in Kenya, with Especial Reference to Digo and Embu Districts. D. Plum.—p. 162.
Surgical Treatment of Vesicovaginal Fistula. C. V. Braimbridge. —p. 186.
Sterility Problems. A. T. Schofield.—p. 188.

Glasgow Medical Journal

6: 113-176 (Sept.) 1935

The Chemical Constitution of Sex Hormones. J. H. Blackwood.—p. 113.
Developmental Defects of Lens and Their Embryology. Ida Mann. —p. 126.

Journal of Laryngology and Otology, London

50: 729-808 (Oct.) 1935

Treatment of Otosclerotic and Similar Types of Deafness by Local Application of Thyroxine. A. A. Gray.—p. 729.
*Demonstration of Particles of Malignant Growth in Sputum by Means of Wet Film Method. L. S. Dudgeon and C. H. Wrigley.—p. 752.

Demonstration of Particles of Malignant Growth in Sputum.—Dudgeon and Wrigley have examined the sputum of fifty-eight persons believed to be suffering from malignant growth of the lung or respiratory tract. They have been able to demonstrate the histologic type of growth present in twenty out of twenty-six positive cases. They obtained the sputum as soon as it was expectorated, so as to avoid, as far as possible, both autolysis and the lesser digestive action of the polymorphonuclears. Each specimen of sputum was poured on an unglazed porcelain tile. Film preparations were then made by spreading the material with a scalpel on clean glass slides. Whenever possible, blood-streaked fragments were chosen. In the absence of these, the more solid portions of sputum were used. In fixing the wet films, Schaudinn's fluid was prepared by adding one volume of absolute alcohol to two volumes of a saturated aqueous solution of mercuric chloride. The best fixation is achieved by leaving the slide immersed in the fluid for twenty minutes. When a rapid diagnosis is needed, a minimum of two minutes is all that is necessary. It is then transferred to methylated spirit to which a few drops of tincture of iodine have been added. A washing in distilled water prepares the slide for staining. Mayer's hemalum gives the most constant results as a nuclear stain. The slide is left in the stain for about two minutes or less. Deep staining should be avoided. It is then transferred to tap water. In the water the color changes from a reddish purple to blue, and the slide must be left until "blueing" has taken place. During this time the thick or uneven parts of the film can be removed from the slide by touching them with a needle. As a counterstain a weak solution of eosin is used. The slide is then taken through the alcohols to xylene in the usual way and mounted with Canada balsam and a cover slip. It has been the authors' practice to make six preparations from each specimen of sputum, and in many cases several specimens have been taken at different dates. Particles of new growth in sputum, when fixed and stained by the foregoing method, are of two types: 1. The common form, associated with "oat-celled" tumors. These fragments, which stain deep blue, consist of a cluster of cells that are slightly smaller than polymorphonuclear leukocytes. The individual cells may belong to one of two varieties. Cells of the first variety have no obvious cytoplasm. Their nuclei show fine granularity, a well defined eccentric nucleolus, and also that variation in density of staining so often seen in malignant tissue. The second variety of cells have a similar nucleus but also a small rim of light blue cytoplasm. Among a cluster of cells of either variety it is usually possible to find typical oat-shaped cells. 2. Fragments of either columnar or squamous celled growth. The individual cells in this group are differentiated from those of the oat-celled variety by their greater size, larger nuclei and the presence of a considerable amount of cytoplasm, which stains pink with eosin. In 68 per cent of proved cases of carcinoma of the lung or larynx it was possible to establish the diagnosis from the examination of the sputum, and in the majority of instances the microscopic type of growth present could be distinguished. A description is given of the characteristic appearances of inflammatory and "scavenger" cells, as seen in the preparations.

Journal of State Medicine, London

43: 497-558 (Sept.) 1935

Side Lights on Health of Workers and Their Occupations. T. Oliver. —p. 497.
Health Aspects of Town Planning. A. J. Shinnie.—p. 505.
Standardization of Food. R. K. Brown.—p. 513.
Modern Conception of Tuberculosis and Its Prevention and Treatment. G. S. Johnston.—p. 521.
Prevention of Maternal Disability by Postnatal Care. Amy Fleming. —p. 537.
Scope of Postnatal Care. Margaret M. Basden.—p. 544.

Journal of Tropical Medicine and Hygiene, London

38: 225-236 (Sept. 16) 1935

Certain Serologic Tests Used in Diagnosis of Leishmaniasis in Dogs. F. Marchesi and R. Scapaticci.—p. 225.
Investigations on Seasonal Variations of Canine Leishmaniasis in Rome. F. Marchesi, F. Crainz and R. Scapaticci.—p. 226.
Peculiar Febrile Hepatosplenomegaly with Arthritis: Note. A. Castellani. —p. 229.
Diagnosis of Hepatosplenomegalies. A. Castellani.—p. 230.

Lancet, London

2: 647-696 (Sept. 21) 1935

Respiratory and Vascular Changes in Mammal Before and After Birth. J. Barcroft.—p. 647.
*Combined Distance Radiation of Hypopharyngeal Cancer. S. Cade and F. M. Allchin.—p. 652.
Treatment of Low Calcium Tetany with Calciferol. R. S. Stacey. —p. 656.
*Azotemia in Acute Bright's Disease. J. B. Rennie.—p. 658.
Amount of Hemoglobin in Blood. E. R. Holiday, Phyllis M. Tookey Kerridge and F. C. Smith.—p. 661.
Old "Laboratory" Strains of Polymorphic Trypanosomes. H. L. Duke. —p. 665.

Combined Distance Radiation of Hypopharyngeal Cancer.—Cade and Allchin's treatment of cancer of the hypopharynx deals with a method of therapy that they describe as the "combined distance radiation." All patients were examined by indirect laryngoscopy; the situation, extent and type of lesion were determined; oral hygiene and dental treatment precede active irradiation. Roentgenograms of the chest, neck and a barium sulfate swallow are carried out; full blood counts are done weekly. The skin of the neck and the mucous membrane of the mouth are inspected daily; a complete laryngologic examination is done weekly or twice weekly. About one third of the total number of patients treated are not hospitalized. The method of treatment consists in a combination of radiation in the following order: (1) preliminary x radiation

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for five days, (2) simultaneous x and gamma radiation and (3) gamma radiation with the 2 Gm. radium unit continued after cessation of x-rays. The rationale underlying the combined method is based on the following observations: 1. It was pointed out by Quick that a larger tissue dose can be given with safety and comfort by the combined method than by either method alone. If the total maximal dose given by each method alone is represented by 100 per cent, allowing a reduction of 25 per cent for each type, a total dose of 150 per cent can be delivered by the combined method. 2. From the cases treated it appears that a variation of the wavelength used increases the degree of radiosensitivity. 3. The local tolerance of the skin and mucous membrane is increased. 4. The limit of general tolerance of the patient is never reached before the limit of the local tolerance of the skin or mucous membrane, so that treatment need not be interrupted before an adequate dose is delivered. The number of cases treated by the combined method during the last three and a half years was fifty-two. The longest period of survival to date is three and a half years. One patient died from other causes, free from disease by histologic examination after complete postmortem examination. Among the nonsuccessful cases are those, the majority, in which initial improvement and even total disappearance of the disease was followed by local recurrence within periods varying from six to eighteen months and those in which the disease progressed in spite of and actually during the treatment. Of the fifty-two patients with hypopharyngeal cancer, seventeen remain free from disease for periods up to three and a half years.

Azotemia in Acute Nephritis.—Among ninety-eight children suffering from acute nephritis, Rennie found azotemia in 60 per cent of those examined within seven days of the onset and in 51 per cent of those examined in the second week. The degree of azotemia bore no relation either to the amount of edema or to the height of the blood pressure. The nonprotein nitrogen of the blood bore no relation to the incidence or the severity of the cerebral manifestations in acute nephritis. A single observation of the nonprotein nitrogen of the blood early in the disease is of no prognostic value. The persistence of azotemia after the third week of illness was found to be of grave significance. A sufficient amount of protein in the diet does not militate against the disappearance of azotemia and has apparently no harmful effect.

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2: 697-752 (Sept. 28) 1935

Neurotropic Virus Diseases. E. W. Hurst.—p. 697.
The Forceps Operation. A. J. Wrigley.—p. 702.
*Value of Breathing Exercises in Asthma. J. L. Livingstone and Marjorie Gillespie.—p. 705.
Stabilization of Acromioclavicular Joint. C. P. G. Wakeley.—p. 708.
Working Capacity After Duodenal and Gastric Ulcers: Record of Four Hundred and Thirty Cases. H. H. Bashford and W. L. Scott.—p. 710.
Punctate Basophilia in Rheumatic Cases After Chrysotherapy. G. J. Griffiths and J. Race.—p. 714.
*Lipiodol as Therapeutic Agent. G. Harrower.—p. 715.

Value of Breathing Exercises in Asthma.—Livingstone and Gillespie assert that, in seventy-five cases of asthma treated for one year with expiratory breathing exercises, good clinical results were obtained in fifty-two, improvement in twelve and no improvement in eleven cases. The improvement seemed to depend on the patient acquiring mobility of the chest, natural diaphragmatic breathing, and control of the diaphragm. There is also a considerable psychologic factor. The treatment requires perseverance and effort on the part of the patient and the physician over a considerable time. A number of patients were able to abort impending attacks by these exercises; this appeared to be due to loosening and expulsion of mucus rather than to any other factor. This method of treatment is simple and applicable in all cases; it is sound treatment from the physiologic point of view. Eleven patients were unable to learn diaphragmatic control. In spite of the fact that good results are claimed from breathing exercises alone, it is held that specific treatment should not be neglected—e. g., removal of feathers or of foods—or operation in gross nasal disease.

Iodized Poppy-Seed Oil as Therapeutic Agent.—Harrower reports two cases of localized chronic inflammatory meningitis, both having a certain amount of paresis with loss of control of rectal and bladder sphincters. In both of them iodized poppy-seed oil was injected into the cisterna magna primarily for diagnostic purposes, and the symptoms were alleviated, with complete cure later. In the author's opinion the good results of injection are due to a chemical inflammation superimposed on the chronic condition, causing absorption of the adhesions and of any blood clot or pus present, with relief of the edema of the nerve roots. Lumbar or cisternal puncture is always followed by a reaction in the cerebrospinal fluid, but, judging from the almost immediate benefit in his cases, he is convinced that the iodized oil was the primary factor in producing a return to health.

Medical Journal of Australia, Sydney

2: 275-302 (Aug. 31) 1935

Acute Aseptic Meningitis. I. M. Allen and F. M. Spencer.—p. 275.
Notes on Maternal Mortality. K. Wilson.—p. 281.
Maternal Mortality: Some Practical Points in Prevention. M. E. Smith.—p. 285.
Use of Composite Filters in X-Ray Therapy. C. E. Eddy and J. O'Sullivan.—p. 288.

2: 303-332 (Sept. 7) 1935

"Coastal Fever" and Endemic Tropical Typhus in North Queensland: Recent Investigation, Clinical and Laboratory Findings. M. L. Unwin.—p. 303.
Some Points in Treatment of Appendicitis. A. J. Trinca.—p. 308.
Therapeutic Abortion: Review of Some Cases. W. R. Griffiths.—p. 311.
Paralysis of External Rectus Muscle: Inquiry into Reasons for Post-operative Restoration of Lateral Movement. H. L. St. V. Welch.—p. 315.

2: 333-366 (Sept. 14) 1935

Rôle of Surgery in Certain Vascular Diseases of Extremities. A. E. Coates.—p. 333.
*Simple Colorimetric Method for Determining Concentration of Urea in Blood. Vera I. Krieger.—p. 340.
Dr. John Hughlings Jackson. A. W. Campbell.—p. 344
Correction: Appreciation and Some Reminiscences. A. G. Butler.—p. 348.

Method for Determining Concentration of Urea in Blood.—Krieger used the test Patterson described for detecting gross retention of urea in the blood in more than 500 specimens of blood. The results illustrate the value of this test in indicating the presence of concentrations of urea in the blood stream above the normal range of from 20 to 40 mg. per hundred cubic centimeters. Of 170 specimens of blood in which the urea exceeded 50 mg. per hundred cubic centimeters, only six failed to give the yellow coloration. These exceptions occurred between 50 and 70 mg.; of the 350 specimens with a blood urea of 50 mg. or less, ten showed a trace of color. In these ten cases the blood urea level was from 40 to 50 mg. For the rapid detection of abnormal amounts of urea, this test is without doubt of great value. With as little as 0.2 cc. of blood, gross retention of urea can be detected in a few moments.

Practitioner, London

135: 377-608 (Oct.) 1935

Modern Tendencies in Treatment. J. A. Gunn.—p. 377.
Recent Advances in Dietetics. S. J. Cowell.—p. 384.
Neurology and General Medicine. E. Bramwell.—p. 390.
Recent Advances in Treatment of Nervous Diseases. M. Critchley.—p. 399.
Recent Advances in Treatment Associated with Endocrine Glands. E. C. Dodds.—p. 403.
Recent Advances in Treatment of Heart Disease. K. E. Harris.—p. 413.
Recent Advances in Treatment of Gastro-Intestinal Disorders. A. H. Douthwaite.—p. 421.
Advances in Treatment of Kidney Disease. T. I. Bennett.—p. 433.
Recent Advances in Treatment of Diabetes. G. Graham.—p. 443.
Some Recent Advances in Gynecology. E. Holland.—p. 455.
Recent Advances in Treatment of Diseases of Children, Including Immunization Methods. A. Moncrieff.—p. 468.
Recent Advances in Treatment of Diseases of Skin. J. T. Ingram.—p. 479.
Advances in Treatment of Venereal Diseases. R. Lees.—p. 490.
Recent Advances in Urology. A. E. Roche.—p. 497.
Recent Advances in Treatment of Fractures. A. J. Cokkinis.—p. 507.
Some Recent Advances in Surgery. H. Bailey.—p. 526.
Advances in Physical Treatment. J. Mennell.—p. 533.
Some Recent Advances in Medical Electricity. Justina Wilson.—p. 540.
Advances in Treatment in Otolaryngology. R. S. Stevenson.—p. 549.
Advances in Treatment of Eye Diseases. H. B. Stallard.—p. 560.
New Anesthetic Agents and Methods. F. B. Parsons.—p. 577.
Favorite Prescriptions: X. The Pharmacopeia of St. Thomas's Hospital. V. J. Woolley.—p. 593.

Paris Médical

2: 229-240 (Sept. 28) 1935

*Mental Sequel to Traffic Accidents. P. Chavigny.—p. 229.
Index of Leukocytic Shifting. N.-A. Schulz.—p. 232.
From Dental Caries to Ganglional Tuberculosis of Mediastinum. G. Rosenthal.—p. 235.
*Serum Accidents and Landry's Syndrome After Vaccinotherapy. J. Olmer and J. Paillas.—p. 236.

Mental Effect of Traffic Accidents.—Chavigny discusses the fear neurosis that frequently develops following an automobile or airplane accident. The neurosis frequently involves not only riding in an automobile itself but hearing a car or crossing the street. Except in persons whose occupation necessitates immediate renewal of automobile driving or airplane flying the condition is usually of favorable prognosis. The forgetting of the accident eventually leads to recovery in the majority of cases.

Landry's Syndrome After Vaccinotherapy.—Olmer and Paillas describe a case in which a man, aged 35, who received three injections of a pneumococcus vaccine for a chronic bronchopneumonia, afterward developed a vaccinal reaction of serum type rapidly complicated by an acute ascending polyneuritis. The latter, after temporarily regressing, finally caused death from bulbar involvement. The authors discuss the possible pathogenesis involved and consider it probable that in this rare instance the vaccine caused a colloidoclasis, which in all respects was comparable to the disturbances produced by serotherapy.

Presse Médicale, Paris

43: 1377-1392 (Sept. 4) 1935

Gouty Tophus. F. Rathery and Conte.—p. 1377.
*Influence of Hypoglycemic State on Evolution of Bronchial Asthma. J. Wegierko.—p. 1379.

Hypoglycemia and Bronchial Asthma.—Wegierko's interest in the possible effect of hypoglycemia on bronchial asthma was aroused by a patient with diabetes whose attacks of asthma seemed to improve following the administration of insulin. In order to test this hypothesis the patient was given a large dose of insulin (30 units) in a fasting state and while suffering from an asthmatic attack. The asthma subsided during the development of the resultant hypoglycemia, and the patient remained free from asthma for two succeeding months. A further group of twelve patients with asthma was given insulin during an asthmatic attack to produce hypoglycemia. In all instances the asthmatic attacks subsided with the appearance of hypoglycemia. In some instances, however, they reappeared with the return of normal glycemia. No conclusions can be drawn regarding the possible therapeutic rôle of artificially produced hypoglycemia in asthma, but attention is merely directed toward the curious fact.

43: 1393-1408 (Sept. 7) 1935

Spasmodic or Hypertonic States of Levator Palpebrae Superioris in Focal Cerebral Lesions. H. Schaeffer.—p. 1393.
*Value of Xanthoproteic Reaction in Diagnosis of Renal Insufficiency. N. O. Irdelp, M. Guchan and Mlle. Mufide Kazim.—p. 1396.

Xanthoproteic Reaction in Renal Insufficiency.—Irdelp and his co-workers investigated the xanthoproteic reaction in renal insufficiency with parallel blood urea determinations. The technic of the reaction is simple. The plasma or blood is dealbuminized by the addition of an equal quantity of 20 per cent trichloracetic acid. To 2 cc. of the filtrate placed in a test tube 0.5 cc. of concentrated nitric acid is added. After shaking, the mixture is heated, without boiling, for half a minute over a flame. After cooling, 1.5 cc. of a 33 per cent solution of sodium hydroxide is added and the volume adjusted to 4 cc. with the addition of distilled water. After ten minutes, the yellow liquid is placed in an Autenricht colorimeter and the color matched. The normal value lies between 15 and 35 (usually around 20) but is raised in certain pathologic states. The authors made these determinations in 128 cases of acute, subacute and chronic nephritis. Also the blood urea was determined in all instances and the indicanemia in a large number of cases. The value of the xanthoproteic reaction was raised in all cases of renal insufficiency and was parallel with the blood urea and especially the indicanemia. The authors conclude that the reaction is indisputably valuable in the diagnosis and prognosis of renal insufficiency and may prove an important supplement to the information furnished by measurement of the blood urea.

Tumori, Milan

9: 281-536 (July-Oct.) 1935

Sacrococcygeal Chordoma: Case. P. Pattarin.—p. 281.
Lesions Due to Oil Substances. L. Giacobbi.—p. 308.
*Venom of Bee and of Wasp as Analgesics in Cancer of Female Genitalia. P. Natale.—p. 324.
Local and General Effects of Tar in Relation to Genesis of Tumors and Factors That Modify Them. G. F. De Gaetani.—p. 349.
Changes of Salivary Glands in Patients Presenting Cancer of Mouth. L. Supino.—p. 370.
Contribution to Study of Primary Tumors of Liver. A. Cacciamali.—p. 377.
Cutaneous Fibrosarcoma with Pulmonary Metastases: Case. G. Sciacchitano.—p. 427.
Neuroglia in Cachexia Due to Neoplasm. M. Cattabeni.—p. 439.
Statistic and Systematic Reports on Malignant Tumors Observed During 1932. P. Celli.—p. 449.

Analgesic Effects of Bee Venom in Cancer of Female Genitalia.—Natale observed the analgesic effects of bee and wasp venom in forty-eight cases of cancer of the female genitalia. He injected subcutaneously a first solution containing 0.00001 Gm. of bee venom per cubic centimeter and a second solution containing 0.00003 Gm. of venom per cubic centimeter. The wasp venom was administered in solutions of the same concentrations. The author started with small daily doses of from 0.2 to 0.5 cc. of the first venom solution. These were gradually increased to 2 cc. by the time the second solution was administered. The injections were given every day until the maximal effect was obtained. Of twenty-six patients treated with bee venom, eight obtained no relief, four showed temporary diminution of pain and fourteen showed complete relief. Treatment was well tolerated by all patients. Only cases of mild pain responded to treatment. Those with moderate or intense pain evinced no improvement. The duration of the sedative effect varied. An injection of from 2 to 3 cc. of the second solution of bee venom generally abolished the pain for twenty-four hours. In some cases the sedative effect did not last more than a few hours, while in others the pain disappeared for from several to eight days, and permanently in six cases. The analgesic action is seldom accompanied by disturbances, such as nausea and vomiting, which frequently result from the usual sedatives. The maximal arterial pressure is generally lowered by about 10 mm. of mercury. The effects of wasp venom treatment as a rule correspond to those obtained with bee venom. The wasp venom, however, may cause mild pains in the beginning. Of twenty-two cases treated with wasp venom, four patients presenting mild pain and four others with severe pain obtained no relief. In fourteen cases the pains disappeared by the third or fourth day. The results obtained with wasp venom were less marked than those obtained with bee venom, but they lasted longer. The analgesic action of wasp venom continued for a few days, generally from three to four but sometimes for as many as thirteen days. Neither venom produced local reaction or vomiting or nausea. Lipothymia was not observed after administration of wasp venom as it was in several patients after administration of bee venom. The hypotensive action of the wasp venom did not differ from that of the bee venom. Fifteen minutes after injection there was a gradual fall in the arterial pressure to from 5 to 10 mm. of mercury.

Semana Médica, Buenos Aires

42: 821-896 (Sept. 19) 1935. Partial Index

Cardiac Diseases and Surgery. A. Chueco.—p. 821.
Functional Uronephrosis Due to Effort: Treatment by Denervation of Renal Pedicle and Nephropexis. J. Salleras.—p. 836.
*Patiño Mayer's Signs (Lymphocytosis) in Syphilis. F. A. Pataro.—p. 838.
Allergic Rhinosinusitis. E. Riccitelli and Y. Franchini.—p. 843.
Tuberculous Bacillemia and Tuberculoma of Sclera: Case. I. M. Hernández, J. Lijó Pavia and M. Dusseldorp.—p. 845.
Melena in the New-Born. J. R. Abdala and J. C. Pellerano.—p. 859.

Patiño Mayer's Signs of Syphilis.—Pataro states that lymphocytosis, with more than 30 per cent lymphocytes in the blood and when associated with a clinical picture of suggested syphilis, is of value in the diagnosis of syphilis except in febrile or infectious diseases in which lymphocytosis is a characteristic of the disease. In primary syphilis, lymphocytosis appears when the ganglionar reaction begins to develop; that is, about one week after appearance of the initial chancre. In secondary, tertiary and congenital syphilis, lymphocytosis exists with a positive Wassermann reaction or with a negative Wassermann

reaction that turns positive a few days later. Syphilitic lymphocytosis increases when antisyphilitic treatment is begun (reactivation) but decreases and remains stationary with more than 30 per cent lymphocytes in the blood of patients who have had sufficient treatment and intensifies itself in patients who have not. The author gives Patiño Mayer credit for discovering these signs. He calls "Patiño sign" the primary lymphocytosis, and "tattooing of the blood by lymphocytosis, described by Patiño," the persistence or intensification of lymphocytosis after treatment.

Deutsche medizinische Wochenschrift, Leipzig

61: 1583-1622 (Oct. 4) 1935. Partial Index

Pathogenesis of Distant Thrombosis. H. Storz.—p. 1583.
*Diagnostic Significance of Kauffmann's Diuresis Test. Ruhbaum and Gemeinhardt.—p. 1586.
*Behavior of Blood Pressure in Disturbances of Peripheral Blood Perfusion. M. Ratschow.—p. 1589.
Pure Glucoside of Squill (Scilla Maritima) in Treatment of Cardiac Disturbances. F. Bach and A. Berr.—p. 1591.

Significance of Kauffmann's Diuresis Test.—Ruhbaum and Gemeinhardt made the Kauffmann diuresis test on three groups of persons: healthy ones, patients with compensated heart disease and patients with a slight degree of decompensation. On the basis of suggestions in the literature and of their own observations, they modified the test in some points so that it differed slightly from Kauffmann's original test. In none of the tested groups did they find that Kauffmann's diuresis test was a suitable diagnostic aid. The outcome of the parallel tests without elevation of the legs corroborated these results. The authors discuss a number of factors in Kauffmann's test that may be sources of error.

Disturbances of Peripheral Blood Perfusion.—Under the collective term disturbances of peripheral blood perfusion Ratschow designates a group of vascular diseases the most important symptoms of which are disorders of the extremities of the organism (hands, feet, nose, ears). However, the local restriction of these disorders is only apparent, for the disease processes usually involve the entire vascular system. For this reason it seemed desirable to look for signs that would permit an estimation of vascular regions that are not directly within the sphere of the diseased tissues. A changed behavior of the blood pressure would seem likely, but the blood pressure is practically normal in the majority of patients with disturbances in the peripheral blood perfusion. However, in some patients with Buerger's disease a constant increase in blood pressure has been observed, the author himself observing two such cases. In this connection he points out that recent studies by Förster and others revealed that Buerger's disease may be the cause of multiple sclerosis, transverse myelitis and other neurologic disorders. He concludes that, particularly in younger persons, hypertension of unknown origin would suggest the possibility of obliterating endarteriitis. In patients with Raynaud's disease, the typical attacks are occasionally accompanied by attacks of hypertension. It is assumed that, if hypertension is present during the attack, the disease process involves vascular regions of internal organs. The author points out that the determination of the fluctuations in the blood pressure which develop in response to tolerance tests on the peripheral circulation gives more information than does the ordinary determination of the blood pressure. There are two ways of doing this: (1) The local pressure can be registered by means of the recording sphygmomanometer of Tycos and (2) the modification of the blood pressure by the stasis experiment of Hertzell can be determined. In employing Hertzell's stasis experiment the author observed the greatest deviations from the normal curve in patients in whom the larger peripheral vessels had become stenosed or occluded. In thirty-four patients with arteriosclerosis without hypertension he was able to corroborate Lange's observation that the increase in blood pressure is absent after stasis, whereas in arteriosclerosis with hypertension the increase in blood pressure was greater than in normal persons. In arteriosclerotic diabetic gangrene the blood pressure curves corresponded with those of uncomplicated arteriosclerosis, a proof that peripheral gangrene alone does not permit conclusions regarding the condition of the larger vessels. There were also cases of Buerger's disease with gangrenous processes of the toes in which the functional tests indicated that larger vessels were relatively unimpaired. Patients with acrocyanosis often showed considerable fluctuations in the increase and decrease but otherwise showed a normal behavior. Patients with Raynaud's disease had normal blood pressure changes outside of the attacks, whereas during the attacks the stasis experiment did not elicit fluctuations.

Klinische Wochenschrift, Berlin

14: 1417-1448 (Oct. 5) 1935. Partial Index

*Behavior of Cevitamic Acid and Glutathione in Immunized Animals. H. J. Jusatz, T. Bersin and H. Köster.—p. 1419.
Synthesis of Lipoid Soluble Silicon Compounds. H. P. Kaufmann.—p. 1420.
*Action of Magnesium on Heart. L. Zwillinger.—p. 1429.
Increase in Basal Metabolic Rate if Artificial Pneumothorax is Filled with Carbon Dioxide. A. V. von Frisch and A. Schneiderbaur.—p. 1433.
*Two New Methods for Staining of Blood. H. Hirschfeld.—p. 1437.

Behavior of Cevitamic Acid in Immunized Animals.—Jusatz and his associates determined that prolonged feeding with a diet deficient in vitamin C results in a reduction of the cevitamic acid as well as of the glutathione in the adrenals. The artificial administration of vitamin C prevents this and again produces an increase in these two reducing substances in the adrenals of animals that have received a vitamin deficient diet. Thus there seems to be a close relationship between glutathione and cevitamic acid in the adrenals. The simultaneous occurrence of these two reducing substances in the adrenals is doubtless of functional importance. The authors observed that glutathione exerts a protective action on cevitamic acid. In the experiments described in this report, the authors aimed at determining the behavior of these two reducing substances in immunized animals, because former observations of one of the authors had indicated that an adequate supply of vitamin C is necessary for the development and maintenance of immunity. The blood of animals that for several months have been deprived of vitamin C has only a slight bactericidal power, and the capacity to form antibodies is reduced and retarded. If these animals are given vitamin C in the form of cevitamic acid, the bactericidal power of the blood and the antibody formation are increased. After immunization with horse serum, the glutathione content of the blood of rabbits is reduced. In animals that for several months had been fed on rations deficient in vitamin C and were then immunized, the adrenals contained smaller amounts of cevitamic acid and of glutathione than did those of the animals that had not been immunized. This indicates that cevitamic acid and glutathione are consumed in the course of antibody formation that takes place in immunization with horse serum. If a vitamin deficient diet accompanies antibody formation, the supply of these substances in the adrenals becomes exhausted.

Action of Magnesium on Heart.—Zwillinger reports the history of a patient who had chronic bronchitis, emphysema, cardiac myodegeneration and a severe decompensation. Treatment with digitalis had been given for some time but this medication had to be interrupted on account of toxic manifestations. However, several days after the interruption of the digitalis therapy it became necessary to aid the circulation with strophanthin, but soon there developed extrasystoles and then paroxysms, ventricular flutters and fibrillations. These attacks of flutters and fibrillations were accompanied by cyanosis and cessation of pulsation and of the respiration, but they were of only short duration. Between the attacks there existed extrasystolic arrhythmia. Quinidine was without effect. In the course of an especially severe and prolonged attack of ventricular flutter, when even the corneal reflexes had been abolished and a spontaneous recovery was not expected, the patient was given for the first time an intracardial injection of 10 cc. of a 15 per cent solution of magnesium sulfate. After a few seconds, consciousness returned. The attack of fibrillation was interrupted and there followed a few extrasystoles, but soon the sinus rhythm was undisturbed. Later attacks of extrasystolic arrhythmia could again be interrupted by injections of magnesium sulfate. The patient, who died as the result of a bronchopneumonia, had an uninterrupted sinus rhythm before death. The observations on this patient induced the author to further studies on the action of magnesium. He tried magnesium sulfate in a number of patients with extrasystole or

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tachycardia. In all cases the effect was prompt. The extrasystoles, no matter of what origin, disappeared within a few seconds, but this effect persisted at the most for three hours. The author states that it is advisable to inject first 4 cc. of a 10 per cent solution of magnesium sulfate as a sensitivity test. In extrasystoles he employs from 10 to 20 cc. of the 15 per cent solution. The injection of magnesium sulfate was tried also in three cases of prolonged auricular flutter and in two cases of auricular fibrillation but was ineffective, while it proved effective in a case of strophanthin intoxication. The author made experiments on rabbits in order to determine the effect of magnesium sulfate on strophanthin or digitalis intoxication. Observations made so far indicate clearly that it exerts an influence on digitalis and strophanthin intoxication.

New Methods for Staining Blood.—Hirschfeld first describes a simple oxydase reaction which requires only two reagents that are available in any laboratory; namely, strong solution of iodine and methylene blue. He puts about ten drops of the iodine into a small watch glass. A drop of water, the size of a pinhead, is placed in the center of a cover glass that fits over the watch glass. The clean side of a thin cover glass, on which blood has been spread but not fixed, is pressed onto the drop of water to make the two cover glasses adhere. Then the cover glasses with the blood downward are placed over the watch glass. The developing iodine vapors fix the spread. This requires five minutes on the average, but a slightly longer time is necessary if the room temperature is low, and a shorter time is sufficient in case of high temperature. The cover glass is carefully removed and is stained for five minutes with Löffler's methylene blue. Then follows washing with a strong water stream and the cover glass is dried by means of blotting paper. The preparations should now have a brownish color. Then follows mounting with Canada balsam. After describing the appearance of the various blood elements, if this method is used, the author points out that, if the preparations are stained too much so that the granules appear black, a new preparation must be made and the time of exposure to the iodine vapors must be shortened. If, on the other hand, the staining is too weak, the exposure to iodine must be prolonged. The second staining method described by the author is the staining of the granulophilocytes in the dry preparation. In this test it is necessary to make extremely thin spreads, so as to have the erythrocytes in a single layer. Löffler's methylene blue is poured over an unfixed spread and is allowed to act on it for about five minutes. Then the stain is poured off and water is carefully dropped on the slide to wash the stain. Whereas otherwise there results complete hemolysis from the use of waterly solutions, Löffler's methylene blue solution extracts only the hemoglobin and leaves the stroma of the erythrocytes visible, so that in many the granulofilamentous substance is recognizable. However, as yet the stromas are too pale to make counting easy. To bring them out more clearly, the slides are set up aslant and left to dry in the air. Then they are either passed through a flame five times or are fixed for three minutes in methyl alcohol. Then they are put for two minutes into a half diluted Manson's solution (borax-methylene blue) or, still better, into carbolated gentian violet. After careful rinsing and drying, there follows mounting with Canada balsam. In these preparations the erythrocytes are quite clear and the granulophilocytes have a clear blue-violet color. To be sure, the granules and the stromas are not quite as clear as in the case of supravital methods, but they are clear enough to permit the determination of the percentages. Even the leukocytes can be counted by one who has sufficient experience.

Monatsschrift f. Geburtshülfe u. Gynäkologie, Berlin

100: 125-184 (Sept.) 1935

Secretion of Gastric Juice and Gastric Motility During Normal Pregnancy, Vagohypertonic and Toxic Hyperemesis. H. Winkler.—p. 125.
Significance of Colposcopy for Cancer Research. H. Rogge.—p. 135.
*Significance of Mobile Fetal Head Above Pelvic Inlet in Primiparas. J. Farkas.—p. 138.
*Interstitial Form of Tubal Pregnancy. P. N. Logwinsky.—p. 144.

Fetal Head Above Pelvic Inlet in Primiparas.—Farkas studied the obstetric material of the institute for midwifery in Budapest with regard to the degree of engagement of the fetal head. He reaches the conclusion that the "floating" head signifies in primiparas not always a disproportion between the child and the pelvis. He found that in a total number of 3,829 primiparas there were 305 (8 per cent) in whom the head was floating. The pelvis was contracted in fifty of these but was normal in the others. Delivery was spontaneous in more than 87 per cent of these cases. The author thinks that the condition of the abdominal walls and the uterine contractions do not play an important part in the retarded engagement of the fetal head, but that an increased resistance on the part of the lower portion of the uterus is the chief cause. Since the necessity of a surgical intervention is possible in these cases, he thinks that delivery should be done in an obstetric institution.

Interstitial Pregnancy.—Logwinsky points out that, according to the localization and the direction of the growth of the ovum, various classifications have been suggested for interstitial pregnancy. Glaesmer classifies interstitial pregnancy according to the direction in which the ovum develops into three types: (1) growth in the direction of the isthmus, (2) growth in the musculature of the fundus uteri and (3) growth in the lateral wall of the uterus. After citing figures on the frequency of interstitial pregnancy, the author points out that the etiology of this and of other forms of ectopic pregnancies is not fully understood as yet, but, on the basis of reports in the literature and of his own observations, he thinks that inflammatory changes in the tubes play the most important part. The diagnosis of interstitial pregnancy is rather difficult. Asymmetry of the uterus is not a definite proof, because this is present also in the early stages of angular pregnancy. To be sure, the uterus becomes spherical if the growing ovum begins to fill the uterine cavity, whereas the asymmetry increases constantly in interstitial pregnancy. Some authors ascribe considerable importance to the Simon-Ruge sign; that is, to the fact that the upper boundary of the fundus uteri becomes oblique as the result of the hypertrophy of one of its angles. However, according to Glaesmer, this sign develops only if the ovum grows in the musculature of the fundus uteri but is absent if the growth progresses in the direction of the isthmus or of the lateral uterine wall. Other signs that have been cited as indicative of interstitial pregnancy are the wide base of the uterus and the displacement of the round ligament. Interstitial pregnancy results nearly always in rupture and usually is accompanied by threatening hemorrhages. For this reason early diagnosis is important, for the best treatment is early surgical intervention. The author considers the wedge-shaped resection of the pregnant angle of the uterus the method of choice, because it does not make impossible further conception and normal delivery. He performed this operation in the two cases of interstitial pregnancy described by him. However, in cases in which the fetal sac has already damaged the uterine wall, supravaginal amputation of the uterus is necessary.

Münchener medizinische Wochenschrift, Munich

82: 1597-1632 (Oct. 4) 1935. Partial Index

Specific Infectious Rheumatism. L. Aschoff.—p. 1597.
Erroneous Diagnoses in Rheumatism. O. Vontz.—p. 1598.
Treatment of Chronic Inflammatory Articular Rheumatism. H. Hennes.—p. 1602.
*Ten Years' Autohemotherapy of Pneumonia. G. Tillmann.—p. 1604.

Ten Years' Autohemotherapy of Pneumonia.—Tillmann calls attention to the various quinine preparations that have been recommended for the treatment of pneumonia. He evaluates the monovalent and the polyvalent serums, pointing out that they are rather expensive, that valuable time is lost in their preparation, that the administration of large amounts of serum involves dangers, and that the results obtained with the specific serums have not been noticeably better than those produced with other methods. He himself obtained better results with autohemotherapy than with any other method. He gives a brief description of a case treated in 1925, in which he first observed the favorable effect of autohemotherapy. In the course of the last eight years, he has resorted to it in 100 cases of true pneumonia and in sixty-five cases of postoperative pneumonia. The youngest patient was 4 months old and the oldest 77 years. The author asserts that any one who has seen the pronounced changes produced by autohemotherapy in severe cases of pneu-

monia will be convinced that it is a causal treatment. He observed that the earlier in the course of the pneumonia the autohemotherapy is begun, the more rapid is the success. The technic is simple, but it is best done by two persons: the physician withdraws the blood from the vein and the assistant injects it into the thigh. From 50 to 60 cc. of blood is usually employed in adults, but it is best to use syringes of not more than 10 cc. capacity. It is advisable to inject the blood from one opening in several directions. In nurslings in whom only 5 cc. of blood is required, it may be withdrawn from the cervical vein. The author concludes that autohemotherapy, if applied early, is the best method for uncomplicated pneumonia.

Wiener klinische Wochenschrift, Vienna

48: 1175-1198 (Sept. 27) 1935

*Aspects of Urinary Melanogen. O. Fürth and A. Friedrich.—p. 1175.
Nephroses. H. Elias.—p. 1177.
*Criticism of Links' Serochemical Method for Early Diagnosis of Carcinoma. E. Epstein.—p. 1179.
Results of Treatment of Offstanding Ears. R. Demel.—p. 1185.
Indications for Tonsillectomy in Acute and Chronic Inflammatory Processes of Tonsils. G. Hofer.—p. 1185.
Methods of Examination in Appendicitis. B. Hoch.—p. 1187.

Aspects of Urinary Melanogen.—Fürth and Friedrich call attention to their previous studies on the elimination of melanogen in the urine in case of melanosarcomatosis and report further studies. They used a simple method of conservation of the urine, which long ago was recommended by von Zeynek. The authors thought that it might prove possible to effect a precipitation of melanogen from the urine saturated with barium hydroxide by means of mercury acetate. When to 50 cc. of the mixed melanogen urine saturated with barium hydroxide there were added 10 cc. of glacial acetic acid and then 20 cc. of a saturated aqueous solution of mercury acetate, a voluminous, coarsely flocculated precipitate developed, which contained all the melanogen. This precipitate was immediately filtered off, carefully washed with water and dried at room temperature in the vacuum above concentrated sulphuric acid. They produced melanin from the melanogen of the urine by means of oxidation with iron chloride and report the results of the analysis of the melanin, carbon-hydrogen, nitrogen, sulphur and chlorine contents. Finally they describe experiments on the artificial production of melanogenuria in rabbits.

Criticism of Serochemical Diagnosis of Carcinoma.—Epstein calls attention to a serochemical method for the early diagnosis of carcinoma, devised by Links. The favorable estimation of Links' test by several other investigators who employed it induced the author to try the method. He reached the conclusion that Links' formula cannot serve as a basis for a serodiagnosis of carcinoma. The essential part of the formula, the product of the potassium and magnesium factors, proves, in the majority of cases, without significance for the correctness of the diagnosis, whereas the Sahli factor indicates merely the anemic condition.

48: 1199-1230 (Oct. 4) 1935. Partial Index

Pathology of Inflammation. R. Maresch.—p. 1202.
Gastro-Intestinal Aspects of Influenzal Diseases. K. Hiebaum.—p. 1204.
*Habituation to Use of Insulin. F. Mainzer and W. Joel.—p. 1206.
Foreign Body in Renal Pelvis. R. Chwalla.—p. 1210.
*Spontaneous Cure of Multiple Pulmonary Echinococcus. V. Stern.—p. 1211.

Habituation to Use of Insulin.—In studies on the course of forced feeding cures with insulin, Mainzer and Joel noted that during intravenous administration of insulin the descending portion of the blood sugar curve of persons who are habituated to insulin does not differ from that of the normal curve but returns more rapidly to the initial level and has a tendency to a hyperglycemic reaction. This is the result of a hypophyseally conditioned counterregulation of the adrenals. This observation explained that in the insulin-habituated diabetic patient sudden abstinence from insulin may result in a complete breakdown of the carbohydrate metabolism and also that, following a forced feeding treatment with insulin, a diabetes-like disturbance can be observed following a sugar tolerance test. That the reduction of the blood sugar is more rapid in the case of intravenous administration of insulin than in the case of subcutaneous administration is understandable. However, that this reduction in the latter case is slower in the insulin-habituated organism than in the normal organism requires an explanation. In view of the sudden action of the intravenously administered insulin, there is no possibility for a counterregulation during the phase of reduction in the blood sugar content. Thus there are, in spite of the different degrees of counterregulation in the insulin-habituated and in the normal organism, practically identical curves of the reduction phase. The onset of the counterregulation coincides under these conditions with the exhaustion of the insulin effect. It is different in the case of subcutaneous administration, in which the resorption is slower and the insulin effect persists twice as long or longer. If therefore the counterregulation begins at the same time as in the case of the intravenous test, its influence must become evident in the descending branch of the blood sugar curve. In accordance with this, the blood sugar decreases more slowly and less deeply in the insulin-habituated than in the normal organism. Another cause for the inhibited hypoglycemia in the insulin-habituated organism is the initial "insulin" hyperglycemia that develops even in the case of subcutaneous administration of insulin. The author describes observations in a case of acromegaly which indicate that the counterregulation is effected by the hypophysis and partly without the intermediate action of the adrenals.

Spontaneous Cure of Pulmonary Echinococcus.—Stern discusses the diagnosis of pulmonary echinococcus, pointing out that the diagnosis is not difficult with the aid of roentgenologic and intradermal examinations. He mentions the roentgenologic aspects and enumerates the disorders that must be considered in the differential diagnosis. He stresses that roentgenoscopy alone cannot be the basis of the diagnosis but that the anamnesis and clinical and laboratory examinations also must be considered. He states that, although most of these factors have been discussed in previous reports, little is as yet known about the roentgenologic aspects of the spontaneous cure of pulmonary echinococcus cysts. He differentiates two forms of spontaneous cure: (1) the perforation of the cyst into a bronchus and (2) the calcification of a cyst. The spontaneous cure of multiple pulmonary echinococcus can take place according to the first, the second or the mixed type. The author reports the history of a man, aged 30, whose anamnesis revealed that for a while he had had attacks of coughing with expectoration of numerous membranous shreads. He discusses the differential diagnosis and points out that this case fills in a gap in the roentgenologic aspects of pulmonary echinococcus in that it reveals the various stages of development of the echinococcus cyst. Moreover, it refutes the statement of Grossmann, who maintained that a spontaneous cure was impossible in case of a multiple pulmonary echinococcus, and it contradicts Axelrod, who denied the possibility of the calcification of a dead echinococcus cyst. The roentgenologic aspects of this case corroborated the importance of Steiner's symptom; namely, the double contour of the shadow of the echinococcus cyst. Another noteworthy aspect of this case is that both types of spontaneous cure took place, perforation into the bronchus and calcification of a dead cyst.

Zentralblatt für Gynäkologie, Leipzig

59: 2337-2400 (Oct. 5) 1935

*Local Healing of Ureteral Fistulas and Its Therapeutic Promotion. W. Stoeckel.—p. 2347.
*Pregnancy Pyelitis and Ileus as So-Called Toxicosis: Focal Allergy During Pregnancy. G. von Bud.—p. 2355.
Late Results of Pregnancy Pyelitis. H. Jacobi.—p. 2364.
Renal Calculi and Pregnancy. G. Tsutsulopulos.—p. 2366.

Local Healing of Ureteral Fistulas.—Stoeckel says that it has long been known that ureteral fistulas frequently heal spontaneously and that many surgeons are of the opinion that spontaneous cure should be waited for. The author concedes that the spontaneous healing is always a symptomatic success, for it means liberation from a painful and disagreeable disorder. However, from the functional point of view, spontaneous healing is frequently not a success; it is not desirable if the kidney to which the fistulous ureter belongs has become excluded as the result of ureteral obliteration or has become severely infected, or if these two conditions coexist. The author shows that, if preservation and functional restoration of the "fistulous kidney" is demanded and aimed at, it must be understood that

spontaneous healing is possible only in case of incomplete fistulas and not even in all these cases, and that it is always impossible in case of complete fistulas. He illustrates this with diagrams and emphasizes that a complete ureterovaginal fistula can heal only by way of obliteration of the ureter; that is, with exclusion of the pertaining kidney. Thus spontaneous cure in such cases is equivalent to nephrectomy and should be replaced by early vesical implantation of the fistulous ureter. In some incomplete fistulas, the kidney can be saved. If in case of incomplete fistula the ureter is bent, much depends on how the ureteral peristalsis influences the angle in the ureter, for if it intensifies the angle it prevents healing, but if it stretches the angle it promotes healing. The treatment should aim at stretching the site of the fistula. An attempt should be made to bridge and to immobilize the site of the fistula by means of a retaining ureteral catheter. The author designates such a procedure as "active waiting."

Pregnancy Pyelitis (Ileus) as Toxicosis: Focal Allergy During Pregnancy.—Von Bud states that he treated twenty-five cases of pregnancy pyelitis. Observations convinced him of the importance of focal infection and of the therapeutic value of the elimination of the infectious foci. He also observed that pyelitis is preceded or followed by subcutaneous suffusions, pyodermias, dermatoses, subicterus, anemias, renal and biliary calculi, colpitides, hydramnion, edemas and atony of the uterus. The puerperal pyelitides are to be regarded as flare-ups. Pregnancy pyelitis often results in abortion, premature birth or congenital disorders in the fetus, such as skin diseases and congenital icterus. Severe pyelitis of pregnancy may result in the death of the mother from uremia, sepsis or so-called toxicosis. The author shows further that pyelitis of pregnancy may become complicated by pregnancy ileus. In discussing the etiology of pyelitis and ileus of pregnancy, he expresses the opinion that they are systemic disorders and that stasis and infection are promoting and eliciting factors but not causes. He is inclined to think that these disorders of pregnancy develop on the basis of a focal allergy and shows that pregnancy pyelitis may be regarded as a "dermatosis" of the renal pelvis. He regards cystic mole and chorionepithelioma as a skin disease of the trophoblast of the young ovum. He shows that the elimination of the foci of infection before, during or after pregnancy has a desensitizing effect.

Vrachebnoe Delo, Kharkov

17: 305-368 (No. 5) 1934. Partial Index

Symptoms of Food Poisoning of the Type of Botulism. I. S. Slutskiy, N. A. Govseev and Sh. A. Rossin.—p. 309.
Erythrocyte Sedimentation Test in Abdominal Typhus of Children. S. M. Benderskaya.—p. 325.
*Vaccine Therapy of Whooping Cough. L. L. Kandyba and A. G. Geyler. —p. 339.
Question of Liquidation of Trichinosis. V. A. Kahyus.—p. 355.
Determination of Blood Dextrose After Method of Hagedorn and Jensen. M. Tovbin.—p. 359.

Vaccine Therapy of Whooping Cough.—Kandyba and Geyler report the results of bacterial vaccine therapy in 142 children ranging in age from 4 months to 12 years, suffering from whooping cough. The vaccine was of the concentration of 4 billion microbes to 1 cc. The total amount injected in the course of treatment divided in five or six injections with intervals of one or two days amounted to from 20 to 24 billion microbes. The authors conclude that the bacterial vaccine therapy of whooping cough manifests signs of specificity and gives satisfactory results, although it does not, as a rule, succeed in aborting the course of the disease. The therapeutic effect manifests itself in the diminution of the number and the severity of coughing spasms and in the abatement or termination of vomiting. The duration of the disease is shortened. The earlier the vaccine therapy is instituted, the better the results. In order to obtain a therapeutic effect, the treatment should be instituted not later than the eleventh or twelfth day of the disease. Vaccination begun after the nineteenth day was as a rule without effect. Vaccine therapy did not exert any influence on the course of intercurrent complications of whooping cough. The existence of pneumonia is no contraindication to vaccine therapy. Local reaction was observed in 70 per cent and general in 30 per cent of the cases. The authors conclude that the vaccine therapy is a harmless method.

Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

79: 4872-4946 (Oct. 19) 1935

Indications for Gynecologic Operation. H. Van Der Hoeven.—p. 4872.
*Hemorrhages in Course of Diabetes Mellitus. A. C. M. Lips.—p. 4879.
Increasing Mineral and Vitamin Content of Milk. P. Schoorl.—p. 4887.
Decrease in Acute Appendicitis Mortality. C. Van Staveren.—p. 4892.
Monozygotic Quadruplets. L. J. Frijda.—p. 4896.
Mastoiditis, Sinus Thrombosis and Cerebral Abscess: Unusual Case with Recovery. J. M. T. Gozé.—p. 4899.
Acute Hemolytic Anemia. J. M. Planteydt.—p. 4901.

Hemorrhages in Course of Diabetes Mellitus.—Lips reports a case of diabetes mellitus in a youth, aged 16. The patient exhibited occasionally hematuria while receiving a daily administration of insulin. Omission of insulin one day caused the patient to feel thirsty and dizzy and it led to repeated vomiting of stomach contents mixed with blood. A state of coma supervened from which the patient recovered on carefully regulated insulin treatment. From the review of the literature and his own case, the author arrives at the conclusion that hemorrhages in the course of diabetes treated by insulin are not caused by insulin but are due to the toxic changes in the blood vessels. Insulin or, when insulin is not administered, trauma, embolism or thrombosis should be considered only contributing factors.

Acta Pædiatrica, Stockholm

18: 1-66 and 1-41 (Sept. 18) 1935. Supplement No. 2

Course and Therapy of Diabetes Mellitus in Children. C. W. Herlitz. —p. 1-66.
*Treatment of Diabetes Mellitus During Childhood Without Dietetic Restrictions. B. Söderling.—p. 1-41.

Treatment of Diabetes Mellitus.—Söderling shows that in recent years a number of investigators have demanded a diet with a greater carbohydrate content for patients with diabetes mellitus. He himself has prescribed an entirely unrestricted diet for twenty-one diabetic patients, aged between 3 and 34 years, reasoning that the incretory deficiency is satisfactorily compensated by insulin. The patients have been under observation from six to thirty months. The author adhered to three guiding principles: 1. The well being of the patient is of primary importance. At each control attention was paid to his weight, working capacity, mood, polydipsia and polyuria. 2. The urine must be free from acetone; that is, Legal's test must be entirely negative. 3. Insulin is administered in such a manner that hypoglycemia and an abrupt decrease in the curve are avoided. The patients were put on an ordinary home diet, and even sugar and sweet desserts were taken. This treatment was highly satisfactory in that the patients were able to lead active lives, felt well and had a considerable margin of safety against infections, acidosis and insulin reactions. In sixteen renewed hospitalization proved unnecessary, and precoma or coma did not develop in any of the patients. The insulin dosage, the consumption of carbohydrates, the sugar content of blood and urine and the physical development are discussed. The author stresses that he observed no impairment of the insulin apparatus as the result of the free diet. In two cases the insulin requirement had increased after a year, whereas it was surprisingly constant in the majority of cases. Of seventeen patients of an earlier date, nine continued to receive the same amount of insulin, four were given a larger dose and four a smaller dose after the diet was changed from a restricted one to a free one. The physical and sexual development progressed normally in the course of this treatment.

Bibliotek for Læger, Copenhagen

127: 319-342 (Sept.) 1935

*Synthetic Androsterone: Preliminary Experiences with Its Effect on Seminal Vesicles in Castrated Male Rats. E. Jacobsen and J. T. Christensen.—p. 319.
Investigations on Hyperlipemia and Cholesteroluria. J. Bing and U. Starup.—p. 332.

Synthetic Androsterone.—Jacobsen and Christensen report that a compound prepared from cholesterol, made according to the method of Ruzicka and chemically identical with Butenandt's androsterone, exerted a distinct effect on the growth of the seminal vesicles in castrated rats, the necessary dosage depending on the age of the animals and the length of time since castration. A strong regeneration resulted from a daily dose of 3 mg.; 1 mg. daily, when administered immediately after castration, to a certain extent prevented castration atrophy.